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NEWS 1		Web Page URLs for STN Seminar Schedule - N. America
NEWS 2	Jan 25	BLAST(R) searching in REGISTRY available in STN on the Web
NEWS 3	Jan 29	FSTA has been reloaded and moves to weekly updates
NEWS 4	Feb 01	DKILIT now produced by FIZ Karlsruhe and has a new update frequency
NEWS 5	Feb 19	Access via Tymnet and SprintNet Eliminated Effective 3/31/02
NEWS 6	Mar 08	Gene Names now available in BIOSIS
NEWS 7	Mar 22	TOXLIT no longer available
NEWS 8	Mar 22	TRCTHERMO no longer available
NEWS 9	Mar 28	US Provisional Priorities searched with P in CA/CAplus and USPATFULL
NEWS 10	Mar 28	LIPINSKI/CALC added for property searching in REGISTRY
NEWS 11	Apr 02	PAPERCHEM no longer available on STN. Use PAPERCHEM2 instead.
NEWS 12	Apr 08	"Ask CAS" for self-help around the clock
NEWS 13	Apr 09	BEILSTEIN: Reload and Implementation of a New Subject Area
NEWS 14	Apr 09	ZDB will be removed from STN
NEWS 15	Apr 19	US Patent Applications available in IFICDB, IFIPAT, and IFIUDB
NEWS 16	Apr 22	Records from IP.com available in CAPLUS, HCAPLUS, and ZCAPLUS
NEWS 17	Apr 22	BIOSIS Gene Names now available in TOXCENTER
NEWS 18	Apr 22	Federal Research in Progress (FEDRIP) now available
NEWS 19	Jun 03	New e-mail delivery for search results now available
NEWS 20	Jun 10	MEDLINE Reload
NEWS 21	Jun 10	PCTFULL has been reloaded

NEWS EXPRESS	February 1 CURRENT WINDOWS VERSION IS V6.0d, CURRENT MACINTOSH VERSION IS V6.0a(ENG) AND V6.0Ja(JP), AND CURRENT DISCOVER FILE IS DATED 05 FEBRUARY 2002
NEWS HOURS	STN Operating Hours Plus Help Desk Availability
NEWS INTER	General Internet Information
NEWS LOGIN	Welcome Banner and News Items
NEWS PHONE	Direct Dial and Telecommunication Network Access to STN
NEWS WWW	CAS World Wide Web Site (general information)

Enter NEWS followed by the item number or name to see news on that specific topic.

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FILE 'HOME' ENTERED AT 22:18:32 ON 28 JUN 2002

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                                                          ENTRY    SESSION
FULL ESTIMATED COST                                        0.21       0.21

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STRUCTURE FILE UPDATES:   26 JUN 2002  HIGHEST RN 434281-39-7
DICTIONARY FILE UPDATES:  26 JUN 2002  HIGHEST RN 434281-39-7

TSCA INFORMATION NOW CURRENT THROUGH January 7, 2002

  Please note that search-term pricing does apply when
  conducting SmartSELECT searches.

Crossover limits have been increased.  See HELP CROSSOVER for details.

Calculated physical property data is now available.  See HELP PROPERTIES
for more information.  See STNote 27, Searching Properties in the CAS
Registry File, for complete details:
http://www.cas.org/ONLINE/STN/STNOTES/stnotes27.pdf

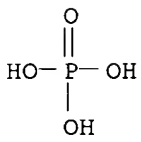
=> e phosphoric acid/cn
E1            1     PHOSPHORIBULOSE ISOMERASE/CN
E2            1     PHOSPHORIBULOSE PYROPHOSPHATE/CN
E3            1 --> PHOSPHORIC ACID/CN
E4            1     PHOSPHORIC ACID ((C12H25O)(ZNO2)PO), MONODODECYL ESTER, ZINC
                     SALT (1:1)/CN
E5            1     PHOSPHORIC ACID (3R)-5-(4-BROMOBENZYL)-7-(3,5-DICHLOROPHENYL
                     )-5-METHYL-6-OXO-6,7-DIHYDRO-5H-IMIDAZO(1,2-A)IMIDAZOL-3-YL
                     DIETHYL ESTER/CN
E6            1     PHOSPHORIC ACID (DIMETHYLAMIDE) DIMORPHOLIDE/CN
E7            1     PHOSPHORIC ACID (DODECYLAMIDE)BIS(DIMETHYLAMIDE)/CN
E8            1     PHOSPHORIC ACID (H10P8O25)/CN
E9            1     PHOSPHORIC ACID (H332PO4)/CN
E10           1     PHOSPHORIC ACID (H4P2O5)/CN
E11           1     PHOSPHORIC ACID (H6P6O18)/CN
E12           1     PHOSPHORIC ACID (MN3(PO4)2.3H2O), NIOBIUM(5+) POTASSIUM ZIRC
                     ONIUM(4+) SALT (12:3:1:5)/CN

=> s e3
L1            1 "PHOSPHORIC ACID"/CN

=> d

L1   ANSWER 1 OF 1  REGISTRY  COPYRIGHT 2002 ACS
RN   7664-38-2  REGISTRY
CN   Phosphoric acid (7CI, 8CI, 9CI)  (CA INDEX NAME)
OTHER NAMES:
CN   3M Etching Liquid
CN   C 134
CN   C 134 (acid)
CN   C 434
CN   C 434 (acid)
CN   Decon 4512
CN   EVITs
CN   K-etchant
CN   Kefo
CN   Mikro Klene DF
```

CN Orthophosphoric acid
CN Sonac
CN SPA 2
CN SPA 2 (catalyst)
CN TG 434
CN Ultra-Etch Gel
CN Uni-Etch
CN WC-Reiniger
FS 3D CONCORD
DR 28602-75-7, 178560-73-1
MF H3 O4 P
CI COM
LC STN Files: AGRICOLA, ANABSTR, BIOBUSINESS, BIOSIS, BIOTECHNO, CA, CABA, CANCERLIT, CAOLD, CAPLUS, CASREACT, CBNB, CEN, CHEMCATS, CHEMINFORMRX, CHEMLIST, CIN, CSCHEM, CSNB, DDFU, DETHERM*, DIOGENES, DIPPR*, DRUGU, EMBASE, ENCOMPLIT, ENCOMPLIT2, ENCOMPPAT, ENCOMPPAT2, GMELIN*, HSDB*, IFICDB, IFIPAT, IFIUDB, IPA, MEDLINE, MRCK*, MSDS-OHS, NAPRALERT, NIOSHTIC, PDLCOM*, PIRA, PROMT, RTECS*, SPECINFO, TOXCENTER, TULSA, ULIDAT, USAN, USPAT2, USPATFULL, VETU, VTB
(*File contains numerically searchable property data)
Other Sources: DSL**, EINECS**, TSCA**
(**Enter CHEMLIST File for up-to-date regulatory information)



PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT

43934 REFERENCES IN FILE CA (1967 TO DATE)
6697 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA
43970 REFERENCES IN FILE CAPLUS (1967 TO DATE)
1 REFERENCES IN FILE CAOLD (PRIOR TO 1967)

=> e sulfuric
E1 2 SULFURHEXAFLUORIDE/BI
E2 13 SULFURIAN/BI
E3 17269 --> SULFURIC/BI
E4 1 SULFURICINAT/BI
E5 10 SULFURICUM/BI
E6 7 SULFURICUS/BI
E7 2 SULFURID/BI
E8 1 SULFURIDAZOLE/BI
E9 1 SULFURIDE/BI
E10 32 SULFURIG/BI
E11 20 SULFURIGASTER/BI
E12 32 SULFURIGENE/BI

=> e sulfuric acid/cn
E1 1 SULFURIAN NAUMANNITE/CN
E2 1 SULFURIAN TELLURIAN CLAUSTHALITE/CN
E3 1 --> SULFURIC ACID/CN
E4 1 SULFURIC ACID ((C7H7O)(HO)SO2), MONO(M-TOLYL) ESTER/CN
E5 1 SULFURIC ACID (D2SO4)/CN
E6 1 SULFURIC ACID (H235SO4)/CN
E7 1 SULFURIC ACID 1,2-DIAMINOETHANE SALT (2:1)/CN
E8 1 SULFURIC ACID ALUMINUM DIMETHYLAMMONIUM SALT (2:1:1) HEXAHYD

```
                    RATE/CN
E9            1     SULFURIC ACID ALUMINUM SALT (AL2(SO4)3)/CN
E10           1     SULFURIC ACID ALUMINUM(3+) SALT (3:2)/CN
E11           1     SULFURIC ACID AMMONIUM CHROMIUM SALT (2:1:1), DIHYDRATE/CN
E12           1     SULFURIC ACID AMMONIUM CHROMIUM SALT (2:1:1), HEXAHYDRATE/CN

=> s e3
L2            1 "SULFURIC ACID"/CN

=> d

L2   ANSWER 1 OF 1  REGISTRY  COPYRIGHT 2002 ACS
RN   7664-93-9  REGISTRY
CN   Sulfuric acid (8CI, 9CI)  (CA INDEX NAME)
OTHER NAMES:
CN   BOV
CN   Brimstone acid
CN   Contact acid
CN   Dihydrogen sulfate
CN   Dipping acid
CN   Oil of vitriol
CN   Sulphuric acid
CN   Vitriol brown oil
FS   3D CONCORD
DR   127529-01-5, 119540-51-1, 140623-70-7
MF   H2 O4 S
CI   COM
LC   STN Files:   AGRICOLA, ANABSTR, BIOBUSINESS, BIOSIS, BIOTECHNO, CA, CABA,
       CANCERLIT, CAOLD, CAPLUS, CASREACT, CBNB, CEN, CHEMCATS, CHEMINFORMRX,
       CHEMLIST, CHEMSAFE, CIN, CSCHEM, CSNB, DDFU, DETHERM*, DIPPR*, DRUGU,
       EMBASE, ENCOMPLIT, ENCOMPLIT2, ENCOMPPAT, ENCOMPPAT2, GMELIN*, HSDB*,
       IFICDB, IFIPAT, IFIUDB, IPA, MEDLINE, MRCK*, MSDS-OHS, NIOSHTIC,
       PDLCOM*, PIRA, PROMT, RTECS*, SPECINFO, TOXCENTER, TULSA, ULIDAT, USAN,
       USPAT2, USPATFULL, VTB
         (*File contains numerically searchable property data)
     Other Sources:   DSL**, EINECS**, TSCA**
         (**Enter CHEMLIST File for up-to-date regulatory information)
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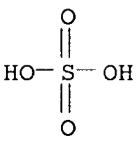

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**PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT**

          68278 REFERENCES IN FILE CA (1967 TO DATE)
           3779 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA
          68324 REFERENCES IN FILE CAPLUS (1967 TO DATE)
              1 REFERENCES IN FILE CAOLD (PRIOR TO 1967)


=> e-boric acid/cn
L3            0 E-BORIC ACID/CN

=> e boric acid
E1            1     BORIBORATE/BI
E2         5671     BORIC/BI
```

```
E3            0 --> BORIC ACID/BI
E4            8     BORICCOBALT/BI
E5            8     BORICCOBALTIC/BI
E6            2     BORICCUPRIC/BI
E7            1     BORICFERRI/BI
E8            1     BORICFERRIC/BI
E9            2     BORICID/BI
E10           1     BORICIDE/BI
E11           2     BORICIN/BI
E12           1     BORICINE/BI

=> e boric acid/cn
E1            1     BORIAN SURINAMITE/CN
E2            1     BORIAN VESUVIANITE/CN
E3            2 --> BORIC ACID/CN
E4            1     BORIC ACID ((H3BO3)), BARIUM ZINC SALT (2:2:1)/CN
E5            1     BORIC ACID ((H3BO3)), CYCLIC 2-ISOPROPYL-2-(1-METHOXYETHYL)T
                    RIMETHYLENE BUTYL ESTER/CN
E6            1     BORIC ACID ((H3BO3)), POLYMER WITH 1-BUTANOL TITANIUM(4+) SA
                    LT, DICHLORODIMETHYLSILANE AND DICHLORODIPHENYLSILANE/CN
E7            1     BORIC ACID ((H4B2O5)), TETRAKIS(TRIETHYLSILYL) ESTER/CN
E8            1     BORIC ACID (B(OH)3)/CN
E9            1     BORIC ACID (BO2), CESIUM COMPLEX/CN
E10           1     BORIC ACID (D2HBO3)/CN
E11           1     BORIC ACID (D310BO3)/CN
E12           1     BORIC ACID (D311BO3)/CN

=> s e3
L4            2 "BORIC ACID"/CN

=> d

L4   ANSWER 1 OF 2  REGISTRY  COPYRIGHT 2002 ACS
RN   11113-50-1  REGISTRY
CN   Boric acid (9CI)  (CA INDEX NAME)
PR   10043-35-3
MF   Unspecified
CI   COM, MAN
LC   STN Files:   BIOSIS, BIOTECHNO, CA, CAPLUS, CASREACT, CHEMLIST, EMBASE,
       IFICDB, IFIPAT, IFIUDB, MEDLINE, MSDS-OHS, NIOSHTIC, PDLCOM*, TOXCENTER,
       USPATFULL
         (*File contains numerically searchable property data)
     Other Sources:   DSL**, EINECS**, TSCA**
         (**Enter CHEMLIST File for up-to-date regulatory information)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
            1505 REFERENCES IN FILE CA (1967 TO DATE)
             162 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA
            1505 REFERENCES IN FILE CAPLUS (1967 TO DATE)


=> e carbonic acid/cn
E1            1     CARBONET/CN
E2            1     CARBONEX/CN
E3            1 --> CARBONIC ACID/CN
E4            1     CARBONIC ACID (4-NITROPHENYL) (2-DIBENZOFURANYL) ESTER/CN
E5            1     CARBONIC ACID (D2CO3)/CN
E6            1     CARBONIC ACID (H2CO3), MANGANESE SALT/CN
E7            1     CARBONIC ACID 1-(5-ACETYL-3-(4-CHLOROPHENYL)-4,5,6,7-TETRAHY
                    DROPYRAZOLO(4,3-C)PYRIDIN-1-YLMETHYL)-2-(4-O-TOLYLPIPERAZIN-
                    1-YL)ETHYL ESTER METHYL ESTER/CN
E8            1     CARBONIC ACID 2-(5-ACETYL-3-(4-TRIFLUOROMETHYLPHENYL)-4,5,6,
                    7-TETRAHYDROPYRAZOLO(4,3-C)PYRIDIN-1-YL)-1-(4-O-TOLYLPIPERAZ
```

```
                  IN-1-YLMETHYL)ETHYL METHYL ESTER/CN
E9          1     CARBONIC ACID 2-ETHOXYCARBONYLOXY-3-NITRO-4-(3-PHENYLPROPION
                  YL)PHENYL ESTER ETHYL ESTER/CN
E10         1     CARBONIC ACID 2-ETHOXYCARBONYLOXY-3-NITRO-4-(4-PHENYLBUTYRYL
                  )PHENYL ESTER ETHYL ESTER/CN
E11         1     CARBONIC ACID 2-ETHOXYCARBONYLOXY-3-NITRO-4-PHENYLACETYLPHEN
                  YL ESTER ETHYL ESTER/CN
E12         1     CARBONIC ACID 4,5-DIBENZOYL-2-ETHOXYCARBONYLOXY-3-NITROPHENY
                  L ESTER ETHYL ESTER/CN

=> s e3
L5          1 "CARBONIC ACID"/CN

=> d

L5   ANSWER 1 OF 1  REGISTRY  COPYRIGHT 2002 ACS
RN   463-79-6  REGISTRY
CN   Carbonic acid (7CI, 8CI, 9CI)  (CA INDEX NAME)
FS   3D CONCORD
DR   97328-76-2
MF   C H2 O3
CI   COM
LC   STN Files:   AGRICOLA, ANABSTR, BIOBUSINESS, BIOSIS, BIOTECHNO, CA,
       CANCERLIT, CAOLD, CAPLUS, CASREACT, CBNB, CEN, CHEMLIST, CIN, CSCHEM,
       DDFU, DETHERM*, DRUGU, EMBASE, GMELIN*, IFICDB, IFIPAT, IFIUDB, MEDLINE,
       MSDS-OHS, NIOSHTIC, PDLCOM*, PIRA, PROMT, TOXCENTER, TULSA, USPAT2,
       USPATFULL, VTB
         (*File contains numerically searchable property data)
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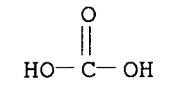

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**PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT**

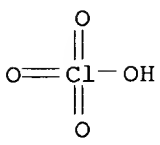
           3888 REFERENCES IN FILE CA (1967 TO DATE)
           2446 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA
           3892 REFERENCES IN FILE CAPLUS (1967 TO DATE)
              3 REFERENCES IN FILE CAOLD (PRIOR TO 1967)


=> e perchloric acid/cn
E1          1     PERCHLORATOTRIS(TRIPHENYLPHOSPHINE)COBALT/CN
E2          1     PERCHLORETHYLENE/CN
E3          1 --> PERCHLORIC ACID/CN
E4          1     PERCHLORIC ACID (H3CLO4), BISMUTH SALT (3:1)/CN
E5          1     PERCHLORIC ACID CALCIUM SALT (2:1)/CN
E6          1     PERCHLORIC ACID COMPD. WITH ACPH/CN
E7          1     PERCHLORIC ACID DIHYDRATE/CN
E8          1     PERCHLORIC ACID GALLIUM(3+) SALT/CN
E9          1     PERCHLORIC ACID HYDRATE/CN
E10         1     PERCHLORIC ACID HYDRATE (HCLO4.5.5H2O)/CN
E11         1     PERCHLORIC ACID INDIUM SALT/CN
E12         1     PERCHLORIC ACID LITHIUM SALT (1:1)/CN

=> s e3
L6          1 "PERCHLORIC ACID"/CN

=> d
```

L6 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2002 ACS
RN 7601-90-3 REGISTRY
CN **Perchloric acid (8CI, 9CI)** (CA INDEX NAME)
DR 101200-37-7, 102278-63-7, 95912-44-0, 95998-58-6, 106644-01-3,
    119630-46-5, 139339-89-2, 153389-31-2, 143171-41-9, 92785-38-1,
    90149-16-9, 47999-51-9, 111341-24-3, 200863-18-9
MF Cl H O4
CI COM
LC STN Files: AGRICOLA, ANABSTR, BIOBUSINESS, BIOSIS, BIOTECHNO, CA,
      CANCERLIT, CAOLD, CAPLUS, CASREACT, CBNB, CEN, CHEMCATS, CHEMINFORMRX,
      CHEMLIST, CIN, CSCHEM, CSNB, DETHERM*, DIPPR*, EMBASE, ENCOMPLIT,
      ENCOMPLIT2, ENCOMPPAT, ENCOMPPAT2, GMELIN*, HSDB*, IFICDB, IFIPAT,
      IFIUDB, IPA, MEDLINE, MRCK*, MSDS-OHS, NIOSHTIC, PDLCOM*, PIRA, PROMT,
      RTECS*, TOXCENTER, TULSA, USPAT2, USPATFULL, VTB
        (*File contains numerically searchable property data)
    Other Sources: DSL**, EINECS**, TSCA**
        (**Enter CHEMLIST File for up-to-date regulatory information)



8929 REFERENCES IN FILE CA (1967 TO DATE)
 318 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA
8933 REFERENCES IN FILE CAPLUS (1967 TO DATE)
   1 REFERENCES IN FILE CAOLD (PRIOR TO 1967)

```
=> e sulfurous acid/cn
E1            1     SULFUROL 8/CN
E2            1     SULFUROSIS ACID, COBALT COMPLEX/CN
E3            1 --> SULFUROUS ACID/CN
E4            1     SULFUROUS ACID (H2SO3)/CN
E5            1     SULFUROUS ACID ANHYDRIDE/CN
E6            1     SULFUROUS ACID BIS(3-(3,5-DI-TERT-BUTYL-4-HYDROXYPHENYL)-2,2
                    -DIMETHYLPROPYL)ESTER/CN
E7            1     SULFUROUS ACID COMPD. WITH HEXAMETHYLENETETRAMINE/CN
E8            1     SULFUROUS ACID MONOETHYL ESTER, BARIUM SALT/CN
E9            1     SULFUROUS ACID MONOETHYL ESTER, CALCIUM SALT/CN
E10           1     SULFUROUS ACID MONOETHYL ESTER, LITHIUM SALT/CN
E11           1     SULFUROUS ACID MONOETHYL ESTER, STRONTIUM SALT/CN
E12           1     SULFUROUS ACID MONOMETHYL ESTER, BARIUM SALT/CN

=> s e3
L7            1 "SULFUROUS ACID"/CN

=> d

L7  ANSWER 1 OF 1  REGISTRY  COPYRIGHT 2002 ACS
RN  7782-99-2  REGISTRY
CN  Sulfurous acid (8CI, 9CI)  (CA INDEX NAME)
OTHER NAMES:
CN  Sulfur dioxide solution
CN  Sulfurous acid (H2SO3)
FS  3D CONCORD
DR  125289-32-9, 63921-72-2, 65003-85-2, 21093-41-4, 104927-19-7, 66085-60-7,
    111910-53-3, 68720-49-0, 70074-94-1, 75481-08-2, 152463-65-5, 80879-60-3,
    110883-84-6
MF  H2 O3 S
```

CI COM
LC STN Files: AGRICOLA, ANABSTR, BIOBUSINESS, BIOSIS, BIOTECHNO, CA, CABA, CAPLUS, CASREACT, CBNB, CEN, CHEMCATS, CHEMINFORMRX, CHEMLIST, CIN, CSCHEM, CSNB, DETHERM*, EMBASE, GMELIN*, IFICDB, IFIPAT, IFIUDB, MRCK*, MSDS-OHS, NIOSHTIC, PDLCOM*, PIRA, PROMT, RTECS*, TOXCENTER, TULSA, USPAT2, USPATFULL, VTB
(*File contains numerically searchable property data)
Other Sources: DSL**, EINECS**, TSCA**
(**Enter CHEMLIST File for up-to-date regulatory information)

PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT

1747 REFERENCES IN FILE CA (1967 TO DATE)
255 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA
1749 REFERENCES IN FILE CAPLUS (1967 TO DATE)

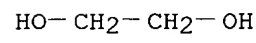
```
=> e ethylene glycol/cn
E1            1      ETHYLENE GERMANATE(IV)/CN
E2            1      ETHYLENE GLCYOL-MAGNESIUM BIS(2-HYDROXYETHYL PHTHALATE)-MALE
                     IC ANHYDRIDE-PHTHALIC ANHYDRIDE-PROPYLENE GLYCOL POLYMER/CN
E3            1 --> ETHYLENE GLYCOL/CN
E4            1      ETHYLENE GLYCOL (13C2H6O2)/CN
E5            1      ETHYLENE GLYCOL (2,4,5-TRICHLOROPHENOXY)ACETATE/CN
E6            1      ETHYLENE GLYCOL (2-CHLORO-4-AMINOPHENYL) ETHER SULFURIC ACID
                      ESTER/CN
E7            1      ETHYLENE GLYCOL (3-CHLORO-4-AMINOPHENYL) ETHER SULFURIC ACID
                      ESTERS/CN
E8            1      ETHYLENE GLYCOL (3-METHYL-4-AMINOPHENYL) ETHER SULFURIC ACID
                      ESTER/CN
E9            1      ETHYLENE GLYCOL .ALPHA.,.ALPHA.-DIHYDROPERFLUOROBUTYL ETHER/
                     CN
E10           1      ETHYLENE GLYCOL .ALPHA.,.ALPHA.-DIHYDROPERFLUOROOCTYL ETHER/
                     CN
E11           1      ETHYLENE GLYCOL .ALPHA.-D-GLUCOPYRANOSIDE/CN
E12           1      ETHYLENE GLYCOL 1,1,7-TRIHYDROPERFLUOROHEPTYL ETHER/CN

=> s e3
L8            1 "ETHYLENE GLYCOL"/CN

=> d

L8  ANSWER 1 OF 1  REGISTRY  COPYRIGHT 2002 ACS
RN  107-21-1  REGISTRY
CN  1,2-Ethanediol (9CI)  (CA INDEX NAME)
OTHER CA INDEX NAMES:
CN  Ethylene glycol (8CI)
CN  Glycol (6CI, 7CI)
OTHER NAMES:
CN  1,2-Dihydroxyethane
CN  1,2-Ethylene glycol
CN  146AR
CN  2-Hydroxyethanol
CN  Dowtherm SR 1
CN  Ethylene alcohol
CN  Ethylene dihydrate
```

CN Fridex
CN Glycol alcohol
CN Macrogol 400 BPC
CN Monoethylene glycol
CN Norkool
CN Ramp
CN Tescol
CN Ucar 17
CN Union Carbide XL 54 Type I De-icing Fluid
CN Zerex
FS 3D CONCORD
DR 37221-95-7, 71767-64-1
MF C2 H6 O2
CI COM
LC STN Files: ADISNEWS, AGRICOLA, ANABSTR, BEILSTEIN*, BIOBUSINESS, BIOSIS, BIOTECHNO, CA, CABA, CANCERLIT, CAOLD, CAPLUS, CASREACT, CBNB, CEN, CHEMCATS, CHEMINFORMRX, CHEMLIST, CHEMSAFE, CIN, CSCHEM, CSNB, DDFU, DETHERM*, DIOGENES, DIPPR*, DRUGU, EMBASE, ENCOMPLIT, ENCOMPLIT2, ENCOMPPAT, ENCOMPPAT2, HODOC*, HSDB*, IFICDB, IFIPAT, IFIUDB, IPA, MEDLINE, MRCK*, MSDS-OHS, NIOSHTIC, PDLCOM*, PIRA, PROMT, RTECS*, SPECINFO, SYNTHLINE, TOXCENTER, TULSA, ULIDAT, USPAT2, USPATFULL, VETU, VTB
(*File contains numerically searchable property data)
Other Sources: DSL**, EINECS**, TSCA**
(**Enter CHEMLIST File for up-to-date regulatory information)



PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT

32767 REFERENCES IN FILE CA (1967 TO DATE)
3316 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA
32816 REFERENCES IN FILE CAPLUS (1967 TO DATE)
2 REFERENCES IN FILE CAOLD (PRIOR TO 1967)

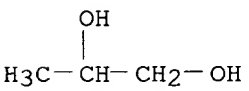
=> e propylene glycol/cn
E1 1 PROPYLENE FUMARATE POLYMER/CN
E2 1 PROPYLENE FUMARATE-PROPYLENE ISOPHTHALATE COPOLYMER/CN
E3 1 --> PROPYLENE GLYCOL/CN
E4 1 PROPYLENE GLYCOL (2-CHLORO-4-AMINOPHENYL) ETHER SULFURIC ACID ESTER/CN
E5 1 PROPYLENE GLYCOL .BETA.-MONOETHYL ETHER/CN
E6 1 PROPYLENE GLYCOL 1,2,3-PROPANETRIYL ETHER-TOLUENE DIISOCYANATE POLYMER/CN
E7 1 PROPYLENE GLYCOL 1,2-DIPROPIONATE/CN
E8 1 PROPYLENE GLYCOL 1,3-DITOSYLATE/CN
E9 1 PROPYLENE GLYCOL 1-BEHENATE/CN
E10 1 PROPYLENE GLYCOL 1-METHYL ETHER 2-ACETATE/CN
E11 1 PROPYLENE GLYCOL 1-MONONITRATE/CN
E12 1 PROPYLENE GLYCOL 1-MONOPROPIONATE/CN

=> s e3
L9 1 "PROPYLENE GLYCOL"/CN

=> d

L9 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2002 ACS
RN 57-55-6 REGISTRY
CN 1,2-Propanediol (8CI, 9CI) (CA INDEX NAME)

OTHER NAMES:
CN (.+-.)-1,2-Propanediol
CN (.+-.)-Propylene glycol
CN (RS)-1,2-Propanediol
CN .alpha.-Propylene glycol
CN 1,2-(RS)-Propanediol
CN 1,2-Dihydroxypropane
CN 1,2-Propylene glycol
CN 1000PG
CN 2,3-Propanediol
CN 2-Hydroxypropanol
CN DL-1,2-Propanediol
CN dl-Propylene glycol
CN Dowfrost
CN Isopropylene glycol
CN Methylethyl glycol
CN Methylethylene glycol
CN Monopropylene glycol
CN PG 12
CN **Propylene glycol**
CN Sirlene
CN Solar Winter Ban
CN Solargard P
CN Ucar 35
FS 3D CONCORD
DR 63625-56-9, 4254-16-4, 190913-75-8
MF C3 H8 O2
CI COM
LC STN Files: ADISNEWS, AGRICOLA, ANABSTR, BEILSTEIN*, BIOBUSINESS, BIOSIS, BIOTECHNO, CA, CABA, CANCERLIT, CAOLD, CAPLUS, CASREACT, CBNB, CEN, CHEMCATS, CHEMINFORMRX, CHEMLIST, CHEMSAFE, CIN, CSCHEM, CSNB, DDFU, DETHERM*, DIOGENES, DIPPR*, DRUGU, EMBASE, ENCOMPLIT, ENCOMPLIT2, ENCOMPPAT, ENCOMPPAT2, GMELIN*, HODOC*, HSDB*, IFICDB, IFIPAT, IFIUDB, IPA, MEDLINE, MRCK*, MSDS-OHS, NAPRALERT, NIOSHTIC, PDLCOM*, PHAR, PIRA, PROMT, RTECS*, SPECINFO, SYNTHLINE, TOXCENTER, TULSA, ULIDAT, USAN, USPAT2, USPATFULL, VETU, VTB
(*File contains numerically searchable property data)
Other Sources: DSL**, EINECS**, TSCA**
(**Enter CHEMLIST File for up-to-date regulatory information)



PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT

17366 REFERENCES IN FILE CA (1967 TO DATE)
2292 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA
17396 REFERENCES IN FILE CAPLUS (1967 TO DATE)
19 REFERENCES IN FILE CAOLD (PRIOR TO 1967)

=> e butylene glycol/cn
E1 1 BUTYLENE DIACRYLATE-HYDROXYDECYL METHACRYLATE POLYMER/CN
E2 1 BUTYLENE DIMETHACYLATE-METHYL ACRYLATE-VINYL ACETATE POLYMER /CN
E3 3 --> BUTYLENE GLYCOL/CN
E4 1 BUTYLENE GLYCOL BIS(GLYCIDYL ETHER) POLYMER/CN
E5 1 BUTYLENE GLYCOL CHLOROFORMATE/CN
E6 1 BUTYLENE GLYCOL CITRACONATE-BUTYL METHACRYLATE-ETHYL METHACR

```
                    YLATE-VINYLTOLUENE POLYMER/CN
E7          1       BUTYLENE GLYCOL DEHYDROGENASE/CN
E8          1       BUTYLENE GLYCOL DEHYDROGENASE (NAD(P)H)/CN
E9          1       BUTYLENE GLYCOL DIACETATE/CN
E10         1       BUTYLENE GLYCOL DIACRYLATE-ETHYL ACRYLATE-METHYL METHACRYLAT
                    E COPOLYMER/CN
E11         1       BUTYLENE GLYCOL DIGLYCIDYL ETHER/CN
E12         1       BUTYLENE GLYCOL DIGLYCIDYL ETHER HOMOPOLYMER/CN

=> s e3
L10         3 "BUTYLENE GLYCOL"/CN

=> d

L10  ANSWER 1 OF 3  REGISTRY  COPYRIGHT 2002 ACS
RN   25265-75-2  REGISTRY
CN   Butanediol (8CI, 9CI)  (CA INDEX NAME)
OTHER NAMES:
CN   Butylene glycol
MF   C4 H10 O2
CI   IDS, COM
LC   STN Files:   AGRICOLA, ANABSTR, BIOBUSINESS, BIOSIS, BIOTECHNO, CA,
       CAPLUS, CEN, CHEMLIST, CIN, CSCHEM, CSNB, EMBASE, IFICDB, IFIPAT,
       IFIUDB, NIOSHTIC, PDLCOM*, PIRA, PROMT, TOXCENTER, TULSA, USPAT2,
       USPATFULL, VTB
         (*File contains numerically searchable property data)
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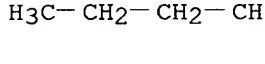

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   2 ( D1-OH )

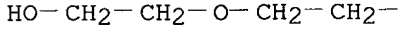
          1028 REFERENCES IN FILE CA (1967 TO DATE)
           197 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA
          1031 REFERENCES IN FILE CAPLUS (1967 TO DATE)


=> e dipropylene glycol/cn
E1          1       DIPROPYLDOPAMINE/CN
E2          1       DIPROPYLENE CARBONATE/CN
E3          1 --> DIPROPYLENE GLYCOL/CN
E4          1       DIPROPYLENE GLYCOL .ALPHA.-METHYL-.BETA.,.BETA.-DICHLOROVINY
                    L PHOSPHATE POLYMER/CN
E5          1       DIPROPYLENE GLYCOL .ALPHA.-METHYL-.BETA.,.BETA.-DICHLOROVINY
                    L PHOSPHATE POLYMER, SRU/CN
E6          1       DIPROPYLENE GLYCOL .BETA.,.BETA.-DIBROMOVINYL PHOSPHATE POLY
                    MER/CN
E7          1       DIPROPYLENE GLYCOL .BETA.,.BETA.-DIBROMOVINYL PHOSPHATE POLY
                    MER, SRU/CN
E8          1       DIPROPYLENE GLYCOL 5,5,6,6,6-PENTAFLUOROHEXYL ETHER SODIUM S
                    ULFATE/CN
E9          1       DIPROPYLENE GLYCOL BENZOATE/CN
E10         1       DIPROPYLENE GLYCOL BIS((6-AMINOHEXYL)CARBAMATE)/CN
E11         1       DIPROPYLENE GLYCOL BIS(2-CHLOROPROPYL) PHOSPHITE/CN
E12         1       DIPROPYLENE GLYCOL BIS(2-PHENYL-2-HYDROXYETHYL) ETHER/CN

=> s e3
L11         1 "DIPROPYLENE GLYCOL"/CN

=> d
```

L11 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2002 ACS
RN 25265-71-8 REGISTRY
CN Propanol, oxybis- (9CI) (CA INDEX NAME)
OTHER CA INDEX NAMES:
CN **Dipropylene glycol (6CI)**
DR 25322-23-0, 75047-14-2, 78644-49-2, 27941-90-8, 27941-91-9, 28678-26-4, 30370-61-7
MF C6 H14 O3
CI IDS, COM
LC STN Files: AGRICOLA, ANABSTR, BIOBUSINESS, BIOSIS, BIOTECHNO, CA, CAOLD, CAPLUS, CASREACT, CBNB, CEN, CHEMCATS, CHEMLIST, CHEMSAFE, CIN, CSCHEM, CSNB, DETHERM*, DIPPR*, EMBASE, HODOC*, HSDB*, IFICDB, IFIPAT, IFIUDB, MSDS-OHS, PDLCOM*, PIRA, PROMT, RTECS*, TOXCENTER, TULSA, USPAT2, USPATFULL, VTB
(*File contains numerically searchable property data)
Other Sources: DSL**, EINECS**, TSCA**
(**Enter CHEMLIST File for up-to-date regulatory information)



2 (D1--Me)

2269 REFERENCES IN FILE CA (1967 TO DATE)
341 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA
2275 REFERENCES IN FILE CAPLUS (1967 TO DATE)
21 REFERENCES IN FILE CAOLD (PRIOR TO 1967)

```
=> e sorbitol/cn
E1            1     SORBITHOME TE/CN
E2            1     SORBITHOME TO/CN
E3            1 --> SORBITOL/CN
E4            1     SORBITOL .5 HYDRATE/CN
E5            1     SORBITOL 1,2,5,6-TETRADECANOATE/CN
E6            1     SORBITOL 1,5,6-TRIDECANOATE/CN
E7            1     SORBITOL 1,5-DISTEARATE/CN
E8            1     SORBITOL 1,6-DIDECANOATE/CN
E9            1     SORBITOL 1,6-DIDOCOSANOATE/CN
E10           1     SORBITOL 1,6-DIEICOSANOATE/CN
E11           1     SORBITOL 1,6-DIPALMITATE/CN
E12           1     SORBITOL 1,6-DISTEARATE/CN

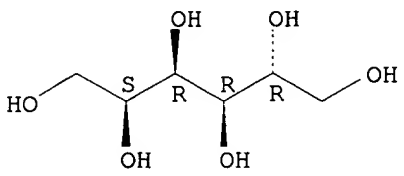
=> s e3
L12           1 SORBITOL/CN

=> d

L12 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2002 ACS
RN 50-70-4 REGISTRY
CN D-Glucitol (9CI) (CA INDEX NAME)
OTHER CA INDEX NAMES:
CN Glucitol, D- (8CI)
CN Sorbitol (7CI)
OTHER NAMES:
CN (-)-Sorbitol
CN C*Sorbidex
CN Cholaxine
CN D-(-)-Sorbitol
```

CN D-Sorbitol
CN D-Sorbol
CN Diakarmon
CN Esasorb
CN Foodol D 70
CN Glucarine
CN Glucarine (sorbitol syrup)
CN Glucitol
CN Karion
CN Karion (carbohydrate)
CN Karion instant
CN Kyowa Powder 50M
CN L-Gulitol
CN Multitol
CN Neosorb
CN Neosorb 20/60DC
CN Neosorb 70/02
CN Neosorb 70/70
CN Neosorb P 20/60
CN Neosorb P 60
CN Nivitin
CN Sionit
CN Sionit K
CN Sionite
CN Sionon
CN Siosan
CN Sorbex M
CN Sorbex R
CN Sorbex Rp
CN Sorbex S
CN Sorbex X
CN Sorbilande
CN Sorbit
CN Sorbit D 70
CN Sorbit Kyowa Powder 50M
CN Sorbit L 70
CN Sorbit S
CN Sorbit T 70
CN Sorbit W 70
CN Sorbit W-Powder
CN Sorbit WP
CN Sorbite
CN Sorbitol F
CN Sorbitol FP
ADDITIONAL NAMES NOT AVAILABLE IN THIS FORMAT - Use FCN, FIDE, or ALL for DISPLAY
FS STEREOSEARCH
DR 8013-15-8, 8014-89-9, 8036-93-9, 8042-39-5, 8045-74-7, 8046-05-7, 63800-20-4, 15060-73-8, 98201-93-5, 3959-53-3, 36134-87-9, 75398-79-7
MF C6 H14 O6
CI COM
LC STN Files: ADISNEWS, AGRICOLA, ANABSTR, BEILSTEIN*, BIOBUSINESS, BIOSIS, BIOTECHNO, CA, CABA, CANCERLIT, CAOLD, CAPLUS, CASREACT, CBNB, CEN, CHEMCATS, CHEMINFORMRX, CHEMLIST, CHEMSAFE, CIN, CSCHEM, CSNB, DDFU, DETHERM*, DIOGENES, DIPPR*, DRUGU, EMBASE, ENCOMPLIT, ENCOMPLIT2, ENCOMPPAT, ENCOMPPAT2, GMELIN*, HODOC*, HSDB*, IFICDB, IFIPAT, IFIUDB, IPA, MEDLINE, MRCK*, MSDS-OHS, NAPRALERT, NIOSHTIC, PDLCOM*, PIRA, PROMT, RTECS*, SPECINFO, TOXCENTER, TULSA, USAN, USPAT2, USPATFULL, VETU, VTB
(*File contains numerically searchable property data)
Other Sources: DSL**, EINECS**, TSCA**
(**Enter CHEMLIST File for up-to-date regulatory information)

Absolute stereochemistry.



PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT

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           13676 REFERENCES IN FILE CA (1967 TO DATE)
            1158 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA
           13691 REFERENCES IN FILE CAPLUS (1967 TO DATE)
               1 REFERENCES IN FILE CAOLD (PRIOR TO 1967)


=> e hexylene glycol
E1            1     HEXYLEICOSYL/BI
E2         1836     HEXYLENE/BI
E3            0 --> HEXYLENE GLYCOL/BI
E4          174     HEXYLENEBIS/BI
E5            2     HEXYLENEBISACET/BI
E6            2     HEXYLENEBISACETAMIDE/BI
E7            1     HEXYLENEBISAZO/BI
E8            1     HEXYLENEBISMETHAN/BI
E9            1     HEXYLENEBISMETHANOL/BI
E10           1     HEXYLENEBISMETHYL/BI
E11           1     HEXYLENEBISMETHYLENE/BI
E12           1     HEXYLENECARB/BI

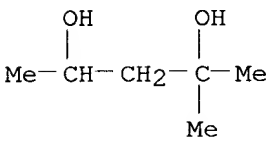
=> e hexylene glycol/cn
E1            1     HEXYLDODECANOL/CN
E2            1     HEXYLDODECYLBENZENE/CN
E3            1 --> HEXYLENE GLYCOL/CN
E4            1     HEXYLENE GLYCOL DIACETATE/CN
E5            1     HEXYLENE GLYCOL DILAURATE/CN
E6            1     HEXYLENE GLYCOL DIOLEATE/CN
E7            1     HEXYLENE GLYCOL TITANATE/CN
E8            1     HEXYLENE SELENITE/CN
E9            1     HEXYLENEBIS(DODECYLDIMETHYLAMMONIUM BROMIDE)/CN
E10           1     HEXYLENEDIAMINE/CN
E11           1     HEXYLENEGLYCOL BORON ANHYDRIDE/CN
E12           1     HEXYLENIC ALDEHYDE/CN

=> s e3
L13           1 "HEXYLENE GLYCOL"/CN

=> d

L13  ANSWER 1 OF 1  REGISTRY  COPYRIGHT 2002 ACS
RN   107-41-5  REGISTRY
CN   2,4-Pentanediol, 2-methyl- (8CI, 9CI)  (CA INDEX NAME)
OTHER NAMES:
CN   (.+-.)-2-Methyl-2,4-pentanediol
CN   .alpha.,.alpha.,.alpha.'-Trimethyltrimethylene glycol
CN   1,1,3-Trimethyltrimethylenediol
CN   2,4-Dihydroxy-2-methylpentane
CN   2-Methyl-2,4-pentanediol
CN   Diolane
CN   Hexylene glycol
```

CN Isol
CN MPD
FS 3D CONCORD
DR 99113-75-4
MF C6 H14 O2
CI COM
LC STN Files: AGRICOLA, ANABSTR, BEILSTEIN*, BIOBUSINESS, BIOSIS, BIOTECHNO, CA, CANCERLIT, CAOLD, CAPLUS, CASREACT, CBNB, CHEMCATS, CHEMINFORMRX, CHEMLIST, CHEMSAFE, CIN, CSCHEM, CSNB, DDFU, DETHERM*, DIPPR*, DRUGU, EMBASE, ENCOMPLIT, ENCOMPLIT2, ENCOMPPAT, ENCOMPPAT2, GMELIN*, HODOC*, HSDB*, IFICDB, IFIPAT, IFIUDB, IPA, MEDLINE, MRCK*, MSDS-OHS, NAPRALERT, NIOSHTIC, PDLCOM*, PIRA, PROMT, RTECS*, SPECINFO, TOXCENTER, TULSA, ULIDAT, USAN, USPAT2, USPATFULL
      (*File contains numerically searchable property data)
    Other Sources: DSL**, EINECS**, TSCA**
      (**Enter CHEMLIST File for up-to-date regulatory information)



PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT

1686 REFERENCES IN FILE CA (1967 TO DATE)
  50 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA
1689 REFERENCES IN FILE CAPLUS (1967 TO DATE)
  18 REFERENCES IN FILE CAOLD (PRIOR TO 1967)

=> e 1,3-dibutylene glycol/cn
E1 1 1,3-DIBUTYLBENZENE/CN
E2 1 1,3-DIBUTYLBUTABARBITAL/CN
E3 0 --> 1,3-DIBUTYLENE GLYCOL/CN
E4 1 1,3-DIBUTYLGUANIDINE/CN
E5 1 1,3-DIBUTYLIMIDAZOLIDINE/CN
E6 1 1,3-DIBUTYLIMIDAZOLIDINE-4,5-DIONE-2-SELONE/CN
E7 1 1,3-DIBUTYLIMIDAZOLIUM BROMIDE/CN
E8 1 1,3-DIBUTYLIMIDAZOLIUM CHLORIDE/CN
E9 1 1,3-DIBUTYLIMIDAZOLIUM TETRAFLUOROBORATE/CN
E10 1 1,3-DIBUTYLINDOLE/CN
E11 1 1,3-DIBUTYLISOCYANURIC ACID/CN
E12 1 1,3-DIBUTYLNAPHTHALENE/CN

=> e 1,2,6-hexanetriol/cn
E1 1 1,2,6-HEXANETRICARBOXYLIC ACID, POLYMER WITH 1,4-BENZENEDICARBOXYLIC ACID, (E)-2-BUTENEDIOIC ACID, .ALPHA.,.ALPHA.'-((1-METHYLETHYLIDENE)DI-4,1-PHENYLENE)BIS(.OMEGA.-HYDROXYPOLY(OXY-1,2-ETHANEDIYL)) A/CN
E2 1 1,2,6-HEXANETRICARBOXYLIC ACID, TRIMETHYL ESTER/CN
E3 1 --> 1,2,6-HEXANETRIOL/CN
E4 1 1,2,6-HEXANETRIOL DIGLUTARIC-MONOMALEIC ACID ESTER/CN
E5 1 1,2,6-HEXANETRIOL ETHER WITH POLYPROPYLENE GLYCOL, ESTER WITH THIOGLYCOLIC ACID/CN
E6 1 1,2,6-HEXANETRIOL POLYPROPYLENE GLYCOL TRIOL-CHLORENDIC ANHYDRIDE-(3,4-EPOXY-6-METHYLCYCLOHEXYL) METHYL 3,4-EPOXY-6-METHYLCYCLOHEXANECARBOXYLATE POLYMER/CN

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E7              1     1,2,6-HEXANETRIOL POLYPROPYLENE GLYCOL TRIOL-TETRACHLOROPHTH
                      ALIC ANHYDRIDE POLYMER/CN
E8              1     1,2,6-HEXANETRIOL TRIACRYLATE/CN
E9              1     1,2,6-HEXANETRIOL TRIGLUTARIC ACID ESTER/CN
E10             1     1,2,6-HEXANETRIOL TRIS((3-(3-(3-(3-GLYCIDYL-5,5-DIMETHYLHYDA
                      NTOIN-1-CARBOXAMIDO)PROPYL)-5,5-DIMETHYL-2,4-DIOXO-1-IMIDAZO
                      LIDINYL)PROPYL)CARBAMATE)/CN
E11             1     1,2,6-HEXANETRIOL TRIS(THIOGLYCOLATE)/CN
E12             1     1,2,6-HEXANETRIOL TRITHIOGLYCOLATE/CN

=> s e3
L14             1 "1,2,6-HEXANETRIOL"/CN

=> d

L14  ANSWER 1 OF 1  REGISTRY  COPYRIGHT 2002 ACS
RN   106-69-4  REGISTRY
CN   1,2,6-Hexanetriol (8CI, 9CI)  (CA INDEX NAME)
OTHER NAMES:
CN   (.+-.)-1,2,6-Hexanetriol
CN   1,2,6-Trihydroxyhexane
FS   3D CONCORD
DR   112254-74-7
MF   C6 H14 O3
CI   COM
LC   STN Files:   BEILSTEIN*, BIOBUSINESS, BIOSIS, CA, CAOLD, CAPLUS, CASREACT,
       CHEMCATS, CHEMINFORMRX, CHEMLIST, CSCHEM, DETHERM*, HODOC*, IFICDB,
       IFIPAT, IFIUDB, MSDS-OHS, NIOSHTIC, RTECS*, SPECINFO, TOXCENTER, USPAT2,
       USPATFULL
         (*File contains numerically searchable property data)
     Other Sources:   EINECS**, NDSL**, TSCA**
         (**Enter CHEMLIST File for up-to-date regulatory information)
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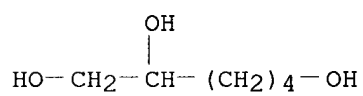

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**PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT**

             417 REFERENCES IN FILE CA (1967 TO DATE)
              45 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA
             418 REFERENCES IN FILE CAPLUS (1967 TO DATE)
              49 REFERENCES IN FILE CAOLD (PRIOR TO 1967)


=> e 1,5-pentanediol/cn
E1              1     1,5-PENTANEDINITRILE/CN
E2              1     1,5-PENTANEDIOIC ACID/CN
E3              1 --> 1,5-PENTANEDIOL/CN
E4              1     1,5-PENTANEDIOL BIS(.BETA.-AMINOCROTONATE)/CN
E5              1     1,5-PENTANEDIOL BIS(2-DIETHYLCARBAMOYLETHYL) ETHER/CN
E6              1     1,5-PENTANEDIOL BIS(2-NAPHTHOATE)/CN
E7              1     1,5-PENTANEDIOL BIS(4-HYDROXYBENZOATE)/CN
E8              1     1,5-PENTANEDIOL BIS(METHOXYACETATE)/CN
E9              1     1,5-PENTANEDIOL BIS(P-METHOXYCINNAMATE)/CN
E10             1     1,5-PENTANEDIOL BIS(PHENOXYACETATE)/CN
E11             1     1,5-PENTANEDIOL CARBONATE/CN
E12             1     1,5-PENTANEDIOL COMPOUND WITH CALCIUM CHLORIDE (2:1) MONOHYD
                      RATE/CN
```

```
=> s e3
L15          1 "1,5-PENTANEDIOL"/CN

=> d

L15  ANSWER 1 OF 1  REGISTRY  COPYRIGHT 2002 ACS
RN   111-29-5  REGISTRY
CN   1,5-Pentanediol (8CI, 9CI)  (CA INDEX NAME)
OTHER NAMES:
CN   .alpha.,.omega.-Pentanediol
CN   .omega.-Pentanediol
CN   1,5-Dihydroxypentane
CN   1,5-Pentamethylene glycol
CN   Pentamethylene glycol
CN   Pentylene glycol
FS   3D CONCORD
MF   C5 H12 O2
CI   COM
LC   STN Files:   AGRICOLA, BEILSTEIN*, BIOBUSINESS, BIOSIS, CA, CANCERLIT,
       CAOLD, CAPLUS, CASREACT, CHEMCATS, CHEMINFORMRX, CHEMLIST, CHEMSAFE,
       CIN, CSCHEM, DETHERM*, DIPPR*, GMELIN*, HODOC*, IFICDB, IFIPAT, IFIUDB,
       MEDLINE, MRCK*, MSDS-OHS, NIOSHTIC, PIRA, PROMT, RTECS*, SPECINFO,
       SYNTHLINE, TOXCENTER, TULSA, USPAT2, USPATFULL, VTB
         (*File contains numerically searchable property data)
     Other Sources:   DSL**, EINECS**, TSCA**
         (**Enter CHEMLIST File for up-to-date regulatory information)


HO—(CH2)5—OH


**PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT**

           1538 REFERENCES IN FILE CA (1967 TO DATE)
             87 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA
           1541 REFERENCES IN FILE CAPLUS (1967 TO DATE)
             56 REFERENCES IN FILE CAOLD (PRIOR TO 1967)

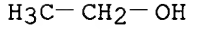

=> e ethanol/cn
E1           1     ETHANOIC ACID MONOMER/CN
E2           1     ETHANOIC ANHYDRIDE/CN
E3           1 --> ETHANOL/CN
E4           1     ETHANOL (((ME)2N(CH2CH2O))4SI), 2-(DIMETHYLAMINO)-, SILICATE
                   /CN
E5           1     ETHANOL (1,2-DICHLORO-1,2,2-TRIFLUORO-), SULFUR COMPLEX/CN
E6           1     ETHANOL (BROMOACETYL)CARBAZATE/CN
E7           1     ETHANOL (C2H5OD)/CN
E8           1     ETHANOL (COMPD. WITH H2PTCL4 (2:1)), 2-AMINO-/CN
E9           1     ETHANOL 2,2'-((1-METHYL-5-NITRO-2-BENZIMIDAZOLYL)METHYLIMINO
                   )DI-, HYDROCHLORIDE/CN
E10          1     ETHANOL ACYLTRANSFERASE/CN
E11          1     ETHANOL AMINE-MALEIC ANHYDRIDE-STYRENE-TRIETHYLENETETRAMINE
                   POLYMER/CN
E12          1     ETHANOL ANION RADICAL/CN

=> s e3
L16          1 ETHANOL/CN

=> d

L16  ANSWER 1 OF 1  REGISTRY  COPYRIGHT 2002 ACS
```

RN 64-17-5 REGISTRY
CN **Ethanol (9CI)** (CA INDEX NAME)
OTHER CA INDEX NAMES:
CN Ethyl alcohol (6CI, 7CI, 8CI)
OTHER NAMES:
CN 100C.NPA
CN Alcare Hand Degermer
CN Alcohol
CN Alcohol anhydrous
CN Algrain
CN Anhydrol
CN Anhydrol PM 4085
CN Desinfektol EL
CN Duplicating Fluid 100C.NPA
CN Esumiru WK 88
CN Ethicap
CN Ethyl hydrate
CN Ethyl hydroxide
CN Hinetoless
CN IMS 99
CN Jaysol
CN Jaysol S
CN Methylcarbinol
CN Molasses alcohol
CN Potato alcohol
CN SDA 3A
CN SDA 40-2
CN SY Fresh M
CN Synasol
CN Tecsol
CN Tecsol C
FS 3D CONCORD
DR 8000-16-6, 8024-45-1, 121182-78-3
MF C2 H6 O
CI COM
LC STN Files: ADISNEWS, AGRICOLA, ANABSTR, BEILSTEIN*, BIOBUSINESS, BIOSIS, BIOTECHNO, CA, CABA, CANCERLIT, CAOLD, CAPLUS, CASREACT, CBNB, CEN, CHEMCATS, CHEMINFORMRX, CHEMLIST, CHEMSAFE, CIN, CSCHEM, CSNB, DDFU, DETHERM*, DIOGENES, DIPPR*, DRUGU, EMBASE, ENCOMPLIT, ENCOMPLIT2, ENCOMPPAT, ENCOMPPAT2, GMELIN*, HODOC*, HSDB*, IFICDB, IFIPAT, IFIUDB, IPA, MEDLINE, MRCK*, MSDS-OHS, NAPRALERT, NIOSHTIC, PDLCOM*, PHARMASEARCH, PIRA, PROMT, RTECS*, SPECINFO, TOXCENTER, TULSA, ULIDAT, USAN, USPAT2, USPATFULL, VETU, VTB
(*File contains numerically searchable property data)
Other Sources: DSL**, EINECS**, TSCA**
(**Enter CHEMLIST File for up-to-date regulatory information)



PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT

132110 REFERENCES IN FILE CA (1967 TO DATE)
1070 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA
132118 REFERENCES IN FILE CAPLUS (1967 TO DATE)
11 REFERENCES IN FILE CAOLD (PRIOR TO 1967)

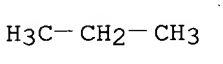
=> e propanol/cn
E1 1 PROPANOIC-D5 ACID-D/CN
E2 1 PROPANOIC-T5 ACID/CN

```
E3            2 --> PROPANOL/CN
E4            1     PROPANOL 14/CN
E5            1     PROPANOL 15/CN
E6            1     PROPANOL 18/CN
E7            1     PROPANOL 21/CN
E8            1     PROPANOL DEHYDROGENASE/CN
E9            1     PROPANOL DEHYDROGENASE (SALMONELLA ENTERICA TYPHI STRAIN CT1
                    8 GENE PDUQ)/CN
E10           1     PROPANOL DEHYDROGENASE PDUQ (SALMONELLA TYPHIMURIUM STRAIN L
                    T2 GENE PDUQ)/CN
E11           1     PROPANOL NITRITE/CN
E12           1     PROPANOL PLUS/CN

=> s e3
L17           2 PROPANOL/CN

=> d

L17  ANSWER 1 OF 2  REGISTRY  COPYRIGHT 2002 ACS
RN   62309-51-7  REGISTRY
CN   Propanol (9CI)  (CA INDEX NAME)
MF   C3 H8 O
CI   IDS, COM
LC   STN Files:   AGRICOLA, BIOBUSINESS, BIOSIS, BIOTECHNO, CA, CAPLUS,
       CASREACT, CEN, CIN, EMBASE, PIRA, PROMT, TOXCENTER, USPAT2, USPATFULL
```




```
             893 REFERENCES IN FILE CA (1967 TO DATE)
              17 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA
             897 REFERENCES IN FILE CAPLUS (1967 TO DATE)

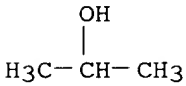

=> e isopropanol/cn
E1            1     ISOPROPANETELLURENYL PHENYL SELENIDE/CN
E2            1     ISOPROPANETHIOL/CN
E3            1 --> ISOPROPANOL/CN
E4            1     ISOPROPANOL ALUMINUM SALT/CN
E5            1     ISOPROPANOL COMPD. WITH IODIDE (1:1)/CN
E6            1     ISOPROPANOL DEHYDROGENASE/CN
E7            1     ISOPROPANOL DEHYDROGENASE (NAD)/CN
E8            1     ISOPROPANOL DEHYDROGENASE (NADP+)/CN
E9            1     ISOPROPANOL DEHYDROGENASE (NICOTINAMIDE ADENINE DINUCLEOTIDE
                     PHOSPHATE)/CN
E10           1     ISOPROPANOL FLUOROSULFATE/CN
E11           1     ISOPROPANOL HOMOPOLYMER/CN
E12           1     ISOPROPANOL ION(1-)/CN

=> s e3
L18           1 ISOPROPANOL/CN

=> d

L18  ANSWER 1 OF 1  REGISTRY  COPYRIGHT 2002 ACS
RN   67-63-0  REGISTRY
CN   2-Propanol (9CI)  (CA INDEX NAME)
OTHER CA INDEX NAMES:
```

CN Isopropyl alcohol (8CI)
OTHER NAMES:
CN 1-Methylethanol
CN 1-Methylethyl alcohol
CN 2-Hydroxypropane
CN 2-Propyl alcohol
CN Alcojel
CN Alcosolve 2
CN Autosept
CN Avantin
CN Avantine
CN Combi-Schutz
CN Dimethylcarbinol
CN Hartosol
CN Imsol A
CN IPA
CN IPS 1
CN IPS 1 (alcohol)
CN iso-Propanol
CN iso-Propyl alcohol
CN Isohol
CN **Isopropanol**
CN Lutosol
CN n-Propan-2-ol
CN Petrohol
CN PRO
CN Propol
CN sec-Propanol
CN sec-Propyl alcohol
CN Sterisol Hand Disinfectant
CN Takineocol
CN Virahol
FS 3D CONCORD
DR 8013-70-5
MF C3 H8 O
CI COM
LC STN Files: ADISNEWS, AGRICOLA, ANABSTR, BEILSTEIN*, BIOBUSINESS, BIOSIS, BIOTECHNO, CA, CABA, CANCERLIT, CAOLD, CAPLUS, CASREACT, CBNB, CEN, CHEMCATS, CHEMINFORMRX, CHEMLIST, CHEMSAFE, CIN, CSCHEM, CSNB, DDFU, DETHERM*, DIOGENES, DIPPR*, DRUGU, EMBASE, ENCOMPLIT, ENCOMPLIT2, ENCOMPPAT, ENCOMPPAT2, GMELIN*, HODOC*, HSDB*, IFICDB, IFIPAT, IFIUDB, IPA, MEDLINE, MRCK*, MSDS-OHS, NAPRALERT, NIOSHTIC, PDLCOM*, PIRA, PROMT, RTECS*, SPECINFO, SYNTHLINE, TOXCENTER, TULSA, ULIDAT, USAN, USPAT2, USPATFULL, VETU, VTB
(*File contains numerically searchable property data)
Other Sources: DSL**, EINECS**, TSCA**
(**Enter CHEMLIST File for up-to-date regulatory information)



PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT

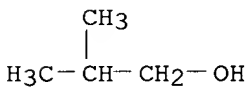
37083 REFERENCES IN FILE CA (1967 TO DATE)
578 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA
37132 REFERENCES IN FILE CAPLUS (1967 TO DATE)
8 REFERENCES IN FILE CAOLD (PRIOR TO 1967)

```
=> e isobutanol/cn
E1            1     ISOBUTANOIC ACID HYDRAZIDE/CN
E2            1     ISOBUTANOIC ANHYDRIDE/CN
E3            1 --> ISOBUTANOL/CN
E4            1     ISOBUTANOL SODIUM SALT/CN
E5            1     ISOBUTANOL VINYL ETHER/CN
E6            1     ISOBUTANOL-2-AMINE/CN
E7            1     ISOBUTANOL-ETHYLCYCLOHEXANE MIXT./CN
E8            1     ISOBUTANOYL CHLORIDE/CN
E9            1     ISOBUTANOYLFERROCENE/CN
E10           1     ISOBUTAVAN/CN
E11           1     ISOBUTEN-1-ONE/CN
E12           1     ISOBUTENAL/CN

=> s e3
L19           1 ISOBUTANOL/CN

=> d

L19  ANSWER 1 OF 1  REGISTRY  COPYRIGHT 2002 ACS
RN   78-83-1  REGISTRY
CN   1-Propanol, 2-methyl- (9CI)  (CA INDEX NAME)
OTHER CA INDEX NAMES:
CN   Isobutyl alcohol (8CI)
OTHER NAMES:
CN   1-Isobutanol
CN   2-Methyl-1-propanol
CN   2-Methylpropyl alcohol
CN   iso-Butyl alcohol
CN   Isobutanol
CN   Isopropyl carbinol
FS   3D CONCORD
MF   C4 H10 O
CI   COM
LC   STN Files:   AGRICOLA, ANABSTR, BEILSTEIN*, BIOBUSINESS, BIOSIS,
       BIOTECHNO, CA, CAOLD, CAPLUS, CASREACT, CBNB, CEN, CHEMCATS,
       CHEMINFORMRX, CHEMLIST, CHEMSAFE, CIN, CSCHEM, CSNB, DDFU, DETHERM*,
       DIPPR*, DRUGU, EMBASE, ENCOMPLIT, ENCOMPLIT2, ENCOMPPAT, ENCOMPPAT2,
       GMELIN*, HODOC*, HSDB*, IFICDB, IFIPAT, IFIUDB, IPA, MEDLINE, MRCK*,
       MSDS-OHS, NAPRALERT, NIOSHTIC, PDLCOM*, PIRA, PROMT, RTECS*, SPECINFO,
       SYNTHLINE, TOXCENTER, TULSA, ULIDAT, USPAT2, USPATFULL, VTB
         (*File contains numerically searchable property data)
     Other Sources:   DSL**, EINECS**, TSCA**
         (**Enter CHEMLIST File for up-to-date regulatory information)
```



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**PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT**

          10124 REFERENCES IN FILE CA (1967 TO DATE)
            152 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA
          10139 REFERENCES IN FILE CAPLUS (1967 TO DATE)
              6 REFERENCES IN FILE CAOLD (PRIOR TO 1967)


=> e butanol/cn
E1            1     BUTANOIC-D7 ACID, SODIUM SALT/CN
E2            1     BUTANOIC-D7 ACID-D/CN
```

```
E3            2 --> BUTANOL/CN
E4            1     BUTANOL DEHYDROGENASE/CN
E5            1     BUTANOL LIGNIN/CN
E6            1     BUTANOL POTASSIUM SALT/CN
E7            1     BUTANOL, ((1-ETHYL-1,2-ETHANEDIYL)BIS(OXY))BIS-/CN
E8            1     BUTANOL, ((1-METHYL-1,2-ETHANEDIYL)BIS(OXY))BIS-/CN
E9            1     BUTANOL, ((1-METHYL-1,2-ETHANEDIYL)DINITRILO)TETRAKIS-/CN
E10           1     BUTANOL, ((2-AMINOETHYL)AMINO)-/CN
E11           1     BUTANOL, ((3A,4,5,6,7,7A-HEXAHYDRO-4,7-METHANO-1H-INDEN-5(OR
                     6)-YL)OXY)-/CN
E12           1     BUTANOL, ((4-AMINO-6-METHOXY-1,3,5-TRIAZIN-2-YL)AMINO)-/CN

=> s e3
L20           2 BUTANOL/CN

=> d

L20  ANSWER 1 OF 2  REGISTRY  COPYRIGHT 2002 ACS
RN   35296-72-1  REGISTRY
CN   Butanol (9CI)  (CA INDEX NAME)
MF   C4 H10 O
CI   IDS, COM
LC   STN Files:   AGRICOLA, BIOBUSINESS, BIOSIS, BIOTECHNO, CA, CAPLUS,
       CASREACT, CEN, CIN, EMBASE, IFICDB, IFIPAT, IFIUDB, PIRA, PROMT,
       TOXCENTER, USPAT2, USPATFULL
```


```
            1284 REFERENCES IN FILE CA (1967 TO DATE)
              53 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA
            1287 REFERENCES IN FILE CAPLUS (1967 TO DATE)


=> file caplus
COST IN U.S. DOLLARS                                SINCE FILE      TOTAL
                                                       ENTRY    SESSION
FULL ESTIMATED COST                                   125.60     125.81

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FILE COVERS 1907 - 28 Jun 2002  VOL 137 ISS 1
FILE LAST UPDATED: 27 Jun 2002  (20020627/ED)
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This file contains CAS Registry Numbers for easy and accurate substance identification.

CAS roles have been modified effective December 16, 2001. Please check your SDI profiles to see if they need to be revised. For information on CAS roles, enter HELP ROLES at an arrow prompt or use the CAS Roles thesaurus (/RL field) in this file.

```
=> s etch? and l1 and l2 and l3 and l4 and l5 and l6 and l7
        163411 ETCH?
         43969 L1
         68322 L2
             0 L3
         19168 L4
          3893 L5
          8933 L6
          1752 L7
L21          0 ETCH? AND L1 AND L2 AND L3 AND L4 AND L5 AND L6 AND L7

=> s etch? or l1 or l2 or l3 or l4 or l5 or l6 or l7
        163411 ETCH?
         43969 L1
         68322 L2
             0 L3
         19168 L4
          3893 L5
          8933 L6
          1752 L7
L22      289966 ETCH? OR L1 OR L2 OR L3 OR L4 OR L5 OR L6 OR L7

=> s ETCH? and (L1 OR L2 OR L3 OR L4 OR L5 OR L6 OR L7)
        163411 ETCH?
         43969 L1
         68322 L2
             0 L3
         19168 L4
          3893 L5
          8933 L6
          1752 L7
L23       5622 ETCH? AND (L1 OR L2 OR L3 OR L4 OR L5 OR L6 OR L7)

=> s l23 and (l8 or l9 or l10 or l11 or l12 or l13 or l14 or l15)
         32823 L8
         17492 L9
         10202 L10
          2282 L11
         13715 L12
          1694 L13
           427 L14
          1541 L15
L24         82 L23 AND (L8 OR L9 OR L10 OR L11 OR L12 OR L13 OR L14 OR L15)

=> s l23 and (l16 or l17 or l18 or l19 or l20)
        132262 L16
         24518 L17
         37145 L18
         10147 L19
         32133 L20
L25        160 L23 AND (L16 OR L17 OR L18 OR L19 OR L20)

=> s l24 and (semiconductor)
        372309 SEMICONDUCTOR
L26         18 L24 AND (SEMICONDUCTOR)
```

```
=> s l25 and semiconductor
        372309 SEMICONDUCTOR
L27          38 L25 AND SEMICONDUCTOR

=> d l26,1-18,all

L26  ANSWER 1 OF 18  CAPLUS  COPYRIGHT 2002 ACS
AN   2002:217417  CAPLUS
DN   137:9993
TI   Estimation of VOCs emission factor for semiconductor
     manufacturing processes
AU   Chein, H.; Chen, M.-H.
CS   Center for Environmental, Safety and Health Technology, Industrial
     Technology Research Institute, Taiwan
SO   Advances in Air Pollution (2001), 10(Air Pollution IX), 491-500
     CODEN: AAPOFM; ISSN: 1369-5886
PB   WIT Press
DT   Journal
LA   English
CC   59-2 (Air Pollution and Industrial Hygiene)
     Section cross-reference(s): 74, 76
AB   The semiconductor manufg. industry contributed significantly to
     economic growth and became the most important industry in Taiwan; however,
     emission of hazardous air pollutants (HAP) produced by this industry is
     increasingly deteriorating ambient air quality.  A great amt. of volatile
     org. compds. (VOC) can be produced and emitted with waste gases from
     semiconductor manufg. processes, e.g., cleaning, etching
     , and photolithog.  This study estd. total VOC emissions from the
     semiconductor industry based on established emission factors,
     defined as the emission rate (kg/mo) divided by the amt. of chems. used
     (L/mo).  The VOC emission rate was measured with a continuous emission
     monitor (CEM).  The amt. of chems. used was adopted from data reported to
     the Department of Environmental Protection by semiconductor
     factories in accordance with regulations.  A total of 9 typical
     semiconductor facilities were analyzed in a 6-mo period.
     Preliminary results showed the VOC emission factor was 0.0481 .+-. 0.0179
     kg/L.  A linear regression function was proposed to fit the data; results
     are presented and discussed.
ST   estg volatile org emission semiconductor manufg waste gas
     Taiwan; air pollution volatile org emission semiconductor manufg
     Taiwan
IT   Standards, legal and permissive
        (air quality; estg. volatile org. hazardous pollutant emission factors
        for air pollution by waste gas from semiconductor manufg.
        processes in Taiwan)
IT   Air pollution
     Electrophotographic developers
       Semiconductor materials
        (estg. volatile org. hazardous pollutant emission factors for air
        pollution by waste gas from semiconductor manufg. processes
        in Taiwan)
IT   Volatile organic compounds
     RL: OCU (Occurrence, unclassified); POL (Pollutant); OCCU (Occurrence)
        (estg. volatile org. hazardous pollutant emission factors for air
        pollution by waste gas from semiconductor manufg. processes
        in Taiwan)
IT   Waste gases
        (semiconductor manufg.; estg. volatile org. hazardous
        pollutant emission factors for air pollution by waste gas from
        semiconductor manufg. processes in Taiwan)
IT   Photolithography
        (solns. for; volatile org. compds. in; estg. volatile org. hazardous
```

pollutant emission factors for air pollution by waste gas from **semiconductor** manufg. processes in Taiwan)

IT 67-63-0, Isopropyl alcohol, occurrence 67-64-1, Acetone, occurrence **107-21-1**, 1,2-Ethanediol, occurrence 540-59-0, Ethene, 1,2-dichloro- 872-50-4, N-Methyl-2-pyrrolidinone, occurrence 1330-20-7, Xylene, occurrence 7647-01-0, Hydrochloric acid, occurrence 7664-39-3, Hydrofluoric acid, occurrence 7664-41-7, Ammonia, occurrence **7664-93-9**, Sulfuric acid, occurrence 7697-37-2, Nitric acid, occurrence
RL: OCU (Occurrence, unclassified); POL (Pollutant); OCCU (Occurrence) (estg. volatile org. hazardous pollutant emission factors for air pollution by waste gas from **semiconductor** manufg. processes in Taiwan)

RE.CNT 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

(1) Anon; VLSI Manufacturing Technology 1995, P183
(2) CTCI Corporation/Environmental Protection Agency; Handbook for Estimation of Taiwan Air Pollutant Emission-SCC Emission Factor Listing Table 1996
(3) Department of Environmental Protection in Hsinchu County; The Project Report of Air Quality Improvement Project in Hsinchu Industry Parks 2000
(4) Environmental Protection Agency; Air Pollution Regulation and Emission Standard for Semiconductor Manufacturing Industry 2000
(5) Environmental Protection Agency; Handbook for Estimation of Taiwan Air Pollutant Emission 2000
(6) Tsai, C; Chinese Association for Aerosol Research in Taiwan 2000, P3

L26 ANSWER 2 OF 18 CAPLUS COPYRIGHT 2002 ACS
AN 2001:246866 CAPLUS
DN 134:288921
TI Fabrication of **semiconductor** device
IN Moriyama, Wakako; Kai, Naoki; Hazama, Hiroaki; Nagai, Keiki; Fukazawa, Yuji; Saki, Kazuaki; Ozawa, Yoshio; Mizutsu, Yasumasa
PA Toshiba Corp., Japan; Toshiba Micro Electronics K. K.
SO Jpn. Kokai Tokkyo Koho, 14 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM H01L021-8247
ICS H01L029-788; H01L029-792; H01L021-318; H01L027-115
CC 76-3 (Electric Phenomena)
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2001093996	A2	20010406	JP 1999-272322	19990927

PI JP 2001093996 A2 20010406 JP 1999-272322 19990927

AB The title method involves forming a gate insulator film on a **semiconductor** substrate by oxy-nitridation, forming a gate electrode on the gate insulator film, forming doped layers sandwiching the gate electrode, and removing the gate insulator film on the doped layers. Addnl., the method may involve forming an insulator or oxynitride film on the doped layers after removing the gate insulator film or carrying out wet oxidn. to decrease the N concn. of the gate insulator film on the doped layers. Specifically, the removal of the gate insulator film may involve **etching**. The gate insulator film being damaged in gate electrode processing is reconstructed.

ST **semiconductor** device fabrication gate insulator film

IT **Etching**
Nitriding
Oxidation
Semiconductor device fabrication
Wet oxidation
(fabrication of **semiconductor** device by repairing gate insulator film)

IT 11105-01-4, Silicon oxynitride

RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(fabrication of **semiconductor** device by repairing gate insulator film)

IT 56-81-5, Glycerol, uses **107-21-1**, Ethylene glycol, uses 110-80-5, Ethylene glycol monoethyl ether **7664-38-2**, Phosphoric acid, uses 7664-39-3, Hydrogen fluoride, uses
RL: NUU (Other use, unclassified); USES (Uses)
(fabrication of **semiconductor** device by repairing gate insulator film)

L26 ANSWER 3 OF 18 CAPLUS COPYRIGHT 2002 ACS
AN 2001:145246 CAPLUS
DN 134:171970
TI Low temperature rinse of **etching** agents in device fabrication
IN Gilton, Terry L.
PA Micron Technology, Inc., USA
SO U.S., 10 pp.
CODEN: USXXAM
DT Patent
LA English
IC ICM H01L021-3063
NCL 438745000
CC 76-3 (Electric Phenomena)
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 6194326	B1	20010227	US 2000-544721	20000406

AB A wafer cleaning process is disclosed for quenching **etch** reactions while rinsing **etch** reactants and **etch** products from the wafer. Holes are **etched** through an insulating layer by reactive ion **etch**, for example. The holes might comprise contact openings over a **semiconductor** substrate, or vias through insulating layers between metal lines. An org. or polymer residue left in the holes is cleaned by a wet process. The cleaning process continues to attack sidewalls of the holes, undesirably widening them. The wafer is therefore rinsed with a rinse agent <0.degree., thermally quenching further **etching** of the sidewalls and affording greater control over the hole dimensions. At the same time, the rinse agent allows relatively rapid diffusion of **etchants** and **etch** products from narrow and deep openings. An exemplary rinse agent for such low temp. rinsing is dil. ethylene glycol.

ST rinsing **etchant** device fabrication

IT **Etching**
(**etchants**; low temp. rinse of **etching** agents in device fabrication)

IT Sputtering
(**etching**, reactive, agents; low temp. rinse of **etching** agents in device fabrication)

IT Alcohols, processes
Amines, processes
Glycols, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(in low temp. rinse of **etching** agents in device fabrication)

IT Contact holes
Semiconductor device fabrication
Washing
(low temp. rinse of **etching** agents in device fabrication)

IT **Etching**
(sputter, reactive, agents; low temp. rinse of **etching** agents in device fabrication)

IT Interconnections (electric)

(vias; low temp. rinse of **etching** agents in device fabrication)
IT 67-63-0, Isopropanol, uses
RL: NUU (Other use, unclassified); USES (Uses)
(drying agent; low temp. rinse of **etching** agents in device fabrication)
IT **7664-38-2**, Phosphoric acid, uses
RL: NUU (Other use, unclassified); USES (Uses)
(**etchant**; low temp. rinse of **etching** agents in device fabrication)
IT **57-55-6**, Propylene glycol, processes **107-21-1**, Ethylene glycol, processes 7732-18-5, Water, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(in low temp. rinse of **etching** agents in device fabrication)
IT 7664-41-7, Ammonia, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(liq.; in low temp. rinse of **etching** agents in device fabrication)
RE.CNT 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
(1) Aoyama; US 5630904 1997 CAPLUS
(2) Li; US 6012469 2000 CAPLUS
(3) Mautz; US 5476816 1995 CAPLUS
(4) Ng; US 5946589 1999 CAPLUS
(5) Sugihara; US 5705089 1998 CAPLUS

L26 ANSWER 4 OF 18 CAPLUS COPYRIGHT 2002 ACS
AN 2001:79329 CAPLUS
DN 134:140321
TI Method for manufacturing metal-insulator-**semiconductor** structures based on thin coatings of a-Si:H
IN Popescu, I. Benedict
PA Rom.
SO Rom., 8 pp.
CODEN: RUXXA3
DT Patent
LA Romanian
IC ICM H01L021-00
CC 76-3 (Electric Phenomena)
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI RO 113505	B3	19980730	RO 1992-1494	19921127

AB The method for manufg. metal-insulator-**semiconductor** structures based on thin coatings of amorphous hydrogenated Si (a-Si:H), with applications in thin coating technol. for manufg. of devices with field effect (e.g., transistors with thin coatings), includes (a) depositing a layer of Ta (4000 .ANG.) by cathodic sputtering in pure Ar atm., (b) **etching** the Ta layer by HF-HNO3-deionized H2O mixt. (1:1:1) , (c) vacuum depositing of an Al layer, (d) chem. oxidn. of Al layer by H3PO4-HNO3-CH3COOH-deionized H2O mixt., (e) anodically oxidizing the 2 layers by ammonium pentaborate-ethylene glycol mixt. (with pH = 5.5-6), resulting a Ta2O5 layer on the Ta layer and a Al2O3 layer on the Al layer, (f) dissolving Al and Al2O3 layers by H3PO4-deionized H2O mixt. at 80.degree., and the gate-gate insulator structure was obtained. The method includes further (g) reactive cathodic sputtering of 3 layers: SiNx (200-400 .ANG.) in pure N2, a-Si:H (1 .mu.m) in Ar + H2, and SiNx (400-1000 .ANG.) in Ar + N2, (h) cathodic vapor depositing of Mo layer (1000-5000 .ANG.), (i) centrifugally depositing an org. photoresistive layer and heat treating at 90-100.degree. for 20-30 min, (j) UV exposing (using the configuration face shield of a-Si:H layer) and developing, (k)

heat treating (90-100.degree. for 20-30 min), (l) chem. corroding (H_2SO_4 + HNO_3 + deionized H_2O mixt.) Mo layer and dissolving in acetone the org. photoresist. The resulted Mo layer was used further in the process as a face shield for configurating the tri-layer SiNx/a-Si:H/SiNx, opening windows for contacting a-Si:H layer, and then dissolving the Mo face shield. On a-Si:H layer are sequenced deposited, in the same vacuum cycle: a high-doped a-Si:H layer (200-300 .ANG.) and a Ni-Cr (80:20-40:60 and 100-500 .ANG.), which is chem. corroded (using the normal electrode face shield) by Ce and ammonium nitrate + $HClO_4$ + deionized H_2O mixt. at 50.degree.. The high-doped a-Si:H layer is chem. corroded (through Ni-Cr face shield). An Al layer is deposited on the whole substrate surface, and using the std. photolithog. process (contact face shield) Al layer is chem. corroded and the photoresistive face shield is dissolved in acetone, and the metal-insulator-**semiconductor** structure was obtained.
The method uses: Ta_2O_5 as a gate insulator (1000-2000 .ANG.) obtained by collective anodically oxidizing, and cathodically deposition as a method for manufg. semiconductive layer of a-Si:H (.apprx.1 .mu.m), which is positioned in a sandwich structure, between 2 thin insulating layers of SiNx (200-1000 .ANG.) manufd. in the same vacuum cycle. The aim of the method is to enhance the transconductance of the devices with field effect and to avoid noxious and/or explosive gases.

ST amorphous hydrogenated silicon MIS device fabrication

IT Anodization
Etching
Heat treatment
Photolithography
Reactive sputtering
Sputtering
(in method for manufg. metal-insulator-**semiconductor** structures based on thin coatings of a-Si:H)

IT Field effect transistors
MIS devices
Semiconductor device fabrication
(method for manufg. metal-insulator-**semiconductor** structures based on thin coatings of a-Si:H)

IT Vapor deposition process
(vacuum; in method for manufg. metal-insulator-**semiconductor** structures based on thin coatings of a-Si:H)

IT 64-19-7, Acetic acid, processes 7429-90-5, Aluminum, processes 7439-98-7, Molybdenum, processes **7664-38-2**, Phosphoric acid, processes **7664-93-9**, Sulfuric acid, processes 11106-97-1 37303-98-3 187745-96-6, Chromium 20-60, nickel 40-80
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(in method for manufg. metal-insulator-**semiconductor** structures based on thin coatings of a-Si:H)

IT 1314-61-0P, Tantalum oxide (Ta_2O_5) 1344-28-1P, Alumina, processes 12033-89-5P, Silicon nitride, processes
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PNU (Preparation, unclassified); PREP (Preparation); PROC (Process); USES (Uses)
(in method for manufg. metal-insulator-**semiconductor** structures based on thin coatings of a-Si:H)

IT 1333-74-0, Hydrogen, processes
RL: MOA (Modifier or additive use); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(in method for manufg. metal-insulator-**semiconductor** structures based on thin coatings of a-Si:H)

IT 56-81-5, Glycerin, processes **107-21-1**, Ethylene glycol, processes 1310-58-3, Potassium hydroxide, processes 6484-52-2, Ammonium nitrate, processes 7440-37-1, Argon, processes **7601-90-3**, Perchloric acid, processes 7664-39-3, Hydrogen fluoride, processes 7697-37-2, Nitric acid, processes 7727-37-9,

Nitrogen, processes 10108-73-3, Cerium nitrate 12007-89-5, Ammonium boron oxide ((NH4)B5O8)
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(in method for manufg. metal-insulator-**semiconductor** structures based on thin coatings of a-Si:H)

IT 7440-21-3, Silicon, processes
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(method for manufg. metal-insulator-**semiconductor** structures based on thin coatings of a-Si:H)

L26 ANSWER 5 OF 18 CAPLUS COPYRIGHT 2002 ACS
AN 2001:64307 CAPLUS
DN 134:124734
TI Compositions and processes for spin **etch** planarization in **semiconductor** device fabrication
IN Levert, Joseph; Towery, Daniel L.
PA Alliedsignal Inc., USA
SO PCT Int. Appl., 38 pp.
CODEN: PIXXD2
DT Patent
LA English
IC ICM H01L021-321
ICS C23F003-06
CC 76-3 (Electric Phenomena)
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI WO 2001006555	A1	20010125	WO 2000-US18723	20000710
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
US 2001054706	A1	20011227	US 1999-356487	19990719
EP 1198827	A1	20020424	EP 2000-947151	20000710
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL				
PRAI US 1999-356487	A	19990719		
WO 2000-US18723	W	20000710		

AB The present invention describes methods and chem. compns. for the spin **etch** planarization of surfaces, particularly Cu and Ta. An **etching** soln. is brought into contact with the upper face of a spinning wafer through a nozzle, preferably an oscillating nozzle. The **etching** soln. has a compn. that oxidizes the spinning surface, forming a passivation layer thereon. The **etching** soln. further contains reactants for removing the passivation layer exposing the underlying surface to further reaction, leading to the desired **etching** of the surface. The characteristics of the **etching** soln. are adjusted such that reactant diffusion to lower regions of the surface limits the rate of **etching**. Faster reaction occurs at higher regions of the surface lying in more rapidly moving **etching** soln. resulting in the desired planarization.

ST spin **etching** polishing **semiconductor** device fabrication; chem mech polishing device fabrication; oxidn **etching** device fabrication

IT Alcohols, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)

(aliph.; in compns. and processes for spin **etch** planarization in **semiconductor** device fabrication)

IT Surfactants
(anionic; in compns. and processes for spin **etch** planarization in **semiconductor** device fabrication)

IT Surfactants
(cationic; in compns. and processes for spin **etch** planarization in **semiconductor** device fabrication)

IT Polishing
(chem.-mech.; compns. and processes for spin **etch** planarization in **semiconductor** device fabrication)

IT **Etching**
Integrated circuits
Semiconductor device fabrication
(compns. and processes for spin **etch** planarization in **semiconductor** device fabrication)

IT Hydrocarbons, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(fluoro; in compns. and processes for spin **etch** planarization in **semiconductor** device fabrication)

IT Nozzles
(for spin **etch** planarization in **semiconductor** device fabrication)

IT Oxidizing agents
Wetting agents
(in compns. and processes for spin **etch** planarization in **semiconductor** device fabrication)

IT Amines, processes
Carboxylic acids, processes
Gelatins, processes
Phenols, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(in compns. and processes for spin **etch** planarization in **semiconductor** device fabrication)

IT Passivation
(in spin **etch** planarization in **semiconductor** device fabrication)

IT Surfactants
(nonionic; in compns. and processes for spin **etch** planarization in **semiconductor** device fabrication)

IT Surfactants
(org.; in compns. and processes for spin **etch** planarization in **semiconductor** device fabrication)

IT **Etching**
(photochem.; for planarization in **semiconductor** device fabrication)

IT Oxidation
(surface; in spin **etch** planarization in **semiconductor** device fabrication)

IT 7440-25-7, Tantalum, processes 7440-50-8, Copper, processes
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(compns. and processes for spin **etch** planarization of)

IT **57-55-6**, Propyleneglycol, processes 60-00-4, EDTA, processes 62-76-0, Sodium oxalate 64-17-5, Ethanol, processes 64-19-7, Acetic acid, processes 67-56-1, Methanol, processes 68-04-2, Trisodium citrate 71-23-8, n-Propanol, processes 75-89-8 77-92-9, Citric acid, processes 87-69-4, Tartaric acid, processes 88-27-7, 2,6-Di-tert-butyl-4-[(dimethylamino)methyl]phenol 89-65-6, Erythorbic acid 95-14-7, 1H-Benzotriazole 102-71-6, Triethanolamine, processes 104-75-6, 2-Ethylhexylamine **107-21-1**, 1,2-Ethanediol, processes

128-37-0, Agidol, processes 139-33-3 144-62-7, Oxalic acid, processes 288-36-8, 1,2,3-Triazole 288-88-0, 1H-1,2,4-Triazole 288-94-8, 1H-Tetrazole 1303-96-4, Borax 1310-73-2, Sodium hydroxide, processes 1333-39-7, Phenolsulfonic acid 1336-21-6, Ammonium hydroxide 6915-15-7, Malic acid 7439-98-7D, Molybdenum, salts, processes 7440-25-7D, Tantalum, salts, processes 7440-50-8D, Copper, salts, processes 7447-40-7, Potassium chloride, processes 7631-95-0, Sodium molybdate 7631-99-4, Sodium nitrate, processes 7647-01-0, Hydrogen chloride, processes **7664-38-2**, Phosphoric acid, processes 7664-39-3, Hydrogen fluoride, processes **7664-93-9**, Sulfuric acid, processes 7697-37-2, Nitric acid, processes 7722-84-1, Hydrogen peroxide, processes 7733-02-0, Zinc sulfate 7758-89-6, Cuprous chloride 7758-98-7, Cupric sulfate, processes 7775-09-9, Sodium chlorate (NaClO3) 8061-51-6, Sodium lignosulfonate 9002-89-5, Polyvinyl alcohol 9002-92-0, Poly(oxyethylene)lauryl ether 9004-32-4, Carboxymethylcellulose 12125-01-8, Ammonium fluoride 14066-19-4, Monohydrogen phosphate, processes 14265-44-2, Phosphate, processes 16887-00-6, Chloride, processes 17084-08-1, Hexafluorosilicate 26053-72-5, Diphenylsulfamic acid 27846-09-9, Iron monochloride 89800-24-8, Laprol 602
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(in compns. and processes for spin **etch** planarization in **semiconductor** device fabrication)

RE.CNT 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

(1) Anon; PATENT ABSTRACTS OF JAPAN 1997, V1997(01)
(2) Contolini; US 5486234 A 1996 CAPLUS
(3) Gelchinski; US 4497692 A 1985 CAPLUS
(4) Ibm; EP 0699782 A 1996 CAPLUS
(5) Kern; RCA REVIEW 1978, V39(2), P278 CAPLUS
(6) Samsung Electronics; DE 19928570 A 1999 CAPLUS
(7) Sasaki; US 5770095 A 1998 CAPLUS
(8) Sez Semiconductor-Equipment; EP 0905754 A 1999 CAPLUS
(9) Ube Ind Ltd; JP 08236615 A 1996 CAPLUS
(10) Unvala; JOURNAL OF THE ELECTROCHEMICAL SOCIETY 1972, V119(3), P318 CAPLUS

L26 ANSWER 6 OF 18 CAPLUS COPYRIGHT 2002 ACS
AN 2001:12778 CAPLUS
DN 134:79754
TI Acid blend for removing **etch** residue on **semiconductor** substrates
IN Torek, Kevin J.; Yates, Donald L.
PA Micron Technology, Inc., USA
SO PCT Int. Appl., 49 pp.
CODEN: PIXXD2
DT Patent
LA English
IC ICM H01L021-3213
ICS H01L021-306; G03F007-42
CC 76-3 (Electric Phenomena)
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI WO 2001001474	A1	20010104	WO 2000-US40096	20000605

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ,

CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG
EP 1196949 A1 20020417 EP 2000-945418 20000605
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO
PRAI US 1999-342243 A 19990629
WO 2000-US40096 W 20000605

AB A method is presented for removing organometallic and organosilicate residues remaining after a dry **etch** process from **semiconductor** substrates. The substrate is exposed to a conditioning soln. of a F source, a nonaq. solvent, a complementary acid, and a surface passivation agent. The F source is typically HF. The nonaq. solvent is typically a polyhydric alc. such as propylene glycol. The complementary acid is typically either H3PO4 or HCl. The surface passivation agent is typically a carboxylic acid such as citric acid. Exposing the substrate to the conditioning soln. removes the remaining dry **etch** residues while minimizing removal of material from desired substrate features.

ST **etching** residue removal acid blend **semiconductor** device fabrication

IT Passivation
Semiconductor device fabrication
(acid blend for removing **etch** residue on **semiconductor** substrates)

IT **Etching**
(dry; acid blend for removing **etch** residue on **semiconductor** substrates)

IT Chelating agents
(**etching** passivation agent; acid blend for removing **etch** residue on **semiconductor** substrates)

IT Alcohols, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(polyhydric; acid blend for removing **etch** residue on **semiconductor** substrates)

IT 515-98-0, Ammonium lactate **10043-35-3**, Boric acid, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(anti-**etch** agent; acid blend for removing **etch** residue on **semiconductor** substrates)

IT 124-38-9, Carbon dioxide, processes 7727-37-9, Nitrogen, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(**etch** rinsing process gas; acid blend for removing **etch** residue on **semiconductor** substrates)

IT 7647-01-0, Hydrogen chloride, processes **7664-38-2**, Phosphoric acid, processes 7664-39-3, Hydrogen fluoride, processes 12125-01-8, Ammonium fluoride
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(**etchant**; acid blend for removing **etch** residue on **semiconductor** substrates)

IT 60-00-4, EDTA, processes 64-19-7, Acetic acid, processes 77-92-9, Citric acid, processes 62624-30-0, Ascorbic acid
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(**etching** passivation agent; acid blend for removing **etch** residue on **semiconductor** substrates)

IT **57-55-6**, Propylene glycol, processes 67-63-0, Isopropyl alcohol, processes 67-68-5, Dimethylsulfoxide, processes **107-21-1**, Ethylene glycol, processes 108-32-7, Propylene carbonate 109-99-9, Tetrahydrofuran, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)

(**etching** solvent; acid blend for removing **etch** residue on **semiconductor** substrates)

IT **463-79-6**, Carbonic acid, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(rinsing agent; acid blend for removing **etch** residue on **semiconductor** substrates)

RE.CNT 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

(1) Grieger; US 5855811 A 1999 CAPLUS
(2) Mitsubishi Gas Chemical; EP 0827188 A 1998 CAPLUS
(3) Wakp Pure Chemicals; EP 0812011 A 1997 CAPLUS
(4) Ward; US 5698503 A 1997 CAPLUS

Inventor

L26 ANSWER 7 OF 18 CAPLUS COPYRIGHT 2002 ACS
AN 2000:725881 CAPLUS
DN 133:289930
TI Selective **etching** of doped from undoped polysilicon in **semiconductor** device fabrication
IN Mercaldi, Garry A.; Yates, Donald L.
PA Micron Technology, Inc., USA
SO PCT Int. Appl., 31 pp.
CODEN: PIXXD2
DT Patent
LA English
IC ICM H01L021-306
ICS H01L021-3213; C23F001-00
CC 76-3 (Electric Phenomena)
Section cross-reference(s): 21

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI WO 2000060651	A1	20001012	WO 2000-US8939	20000405
W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
US 2001004553	A1	20010621	US 1999-285773	19990405
EP 1177575	A1	20020206	EP 2000-921671	20000405
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
US 6316370	B1	20011113	US 2000-644699	20000824
PRAI US 1999-285773	A	19990405		
WO 2000-US8939	W	20000405		

AB The present invention provides an **etching** compn. which includes a polyhydric alc. in combination with two inorg. acids. Preferably the **etching** compn. of the present invention is a mixt. of a glycol, nitric acid and hydrofluoric acid, with propylene glycol being preferred. The **etching** compn. of the present invention achieves a selectivity of greater than 70:1, doped material to undoped material. The present invention provides an **etching** formulation which has increased selectivity of doped polysilicon to undoped polysilicon and provides an efficient integrated circuit fabrication process without requiring time consuming and costly processing modifications to the **etching** app. or prodn. app.

ST hydric alc inorg acid selective **etching** doping silicon; propylene glycol nitric hydrofluoric acid **etching** **semiconductor** device fabrication

IT Densification
(BSPG; and selective **etching** in **semiconductor** device fabrication)
IT Annealing
(and selective **etching** of doped from undoped polysilicon in **semiconductor** device fabrication)
IT Glycols, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(**etchants**; in selective **etching** of doped from undoped polysilicon in **semiconductor** device fabrication)
IT Borophosphosilicate glasses
RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(in selective **etching** of doped from undoped polysilicon in **semiconductor** device fabrication)
IT Acids, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(inorg., **etchants**; in selective **etching** of doped from undoped polysilicon in **semiconductor** device fabrication)
IT Alcohols, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(polyhydric, **etchants**; in selective **etching** of doped from undoped polysilicon in **semiconductor** device fabrication)
IT **Semiconductor** device fabrication
(selective **etching** of doped from undoped polysilicon in)
IT Doping
(selective **etching** of doped from undoped polysilicon in **semiconductor** device fabrication)
IT **Etching**
(selective; of doped from undoped polysilicon in **semiconductor** device fabrication)
IT 7440-56-4, Germanium, processes
RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(doped; selective **etching** of)
IT **50-70-4**, Sorbitol, processes **57-55-6**, Propylene glycol, processes 64-17-5, Ethanol, processes 67-63-0, Isopropanol, processes 71-23-8, Propanol, processes 71-36-3, n-Butanol, processes 78-83-1, Iso-butanol, processes **106-69-4**, 1,2,6-Hexanetriol **107-21-1**, Ethylene glycol, processes **107-41-5**, Hexylene glycol **107-88-0**, Butylene glycol **111-29-5**, 1,5-Pentanediol **463-79-6**, Carbonic acid, processes **7601-90-3**, Perchloric acid, processes 7664-39-3, Hydrofluoric acid, processes **7664-93-9**, Sulfuric acid, processes 7697-37-2, Nitric acid, processes **7782-99-2**, Sulfurous acid, processes **10043-35-3**, Boric acid, processes **25265-71-8**, Dipropylene glycol 54289-82-6
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(**etchants**; in selective **etching** of doped from undoped polysilicon in **semiconductor** device fabrication)
IT 7631-86-9, Silica, processes
RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(in selective **etching** of doped from undoped polysilicon in **semiconductor** device fabrication)
IT 7440-21-3, Silicon, processes
RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)

(polycryst.; selective **etching** of doped from undoped polysilicon in **semiconductor** device fabrication)

RE.CNT 9 THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

(1) Anon; PATENT ABSTRACTS OF JAPAN 1984, V008(058), PP-261
(2) Anon; PATENT ABSTRACTS OF JAPAN 1993, V017(681), PP-1660
(3) Baeslack, W; MATERIALS CHARACTERIZATION 1993, V31(4), P197 CAPLUS
(4) Holoubek Jiri Ing; CS 272371 B 1991 CAPLUS
(5) Kogyo Gijutsuin; JP 58207009 A 1983 CAPLUS
(6) Sez Semiconduct Equip Zubehoer; EP 0905754 A 1999 CAPLUS
(7) Sumitomo Metal Ind Ltd; JP 05231996 A 1993
(8) Takeuchi Hiroshi; US 5017513 A 1991 CAPLUS
(9) Woo, S; US 5518966 A 1996 CAPLUS

L26 ANSWER 8 OF 18 CAPLUS COPYRIGHT 2002 ACS

date

AN 2000:628404 CAPLUS

DN 133:201939

TI Method and system to uniformly **etch** substrates using an **etching** composition comprising a fluoride ion source and a hydrogen ion source

IN Christenson, Kurt K.

PA Fsi International, Inc., USA

SO PCT Int. Appl., 35 pp.
CODEN: PIXXD2

DT Patent

LA English

IC ICM H01L021-311
ICS H01L021-306; H01L021-00

CC 76-11 (Electric Phenomena)

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI WO 2000052747	A1	20000908	WO 2000-US5484	20000302

W: CN, JP, KR
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE

PRAI US 1999-261786 A 19990303

AB The present invention provides methods and a system for uniformly plasma **etching** substrates. Specifically, the method and system of the present invention provide for the nonimmersive contact of the substrate to be **etched** with an **etching** compn. comprising a F- ion source and a H ion source. By using an **etching** compn. comprising such components, not only is the **etching** of traditional substrate materials, i.e., Si oxide, improved, but the **etching** of substrate materials traditionally difficult to **etch** satisfactorily, i.e., Si nitride, is made possible.

ST fluoride hydrogen ion **etching** app **semiconductor** device fabrication

IT **Etching**
Etching apparatus
Nozzles
Semiconductor device fabrication
Solvents
(method and system to uniformly **etch** substrates using **etching** compn. comprising fluoride ion source and hydrogen ion source)

IT Acids, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(method and system to uniformly **etch** substrates using **etching** compn. comprising fluoride ion source and hydrogen ion source)

IT **Etching**

(spray; method and system to uniformly **etch** substrates using **etching** compn. comprising fluoride ion source and hydrogen ion source)

IT 56-81-5, Glycerol, processes 64-19-7, Acetic acid, processes **107-21-1**, Ethylene glycol, processes 7647-01-0, Hydrogen chloride, processes **7664-93-9**, Sulfuric acid, processes 7697-37-2, Nitric acid, processes 7732-18-5, Water, processes 12125-01-8, Ammonium fluoride 12408-02-5, Hydrogen ion, processes 16984-48-8, Fluoride, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(method and system to uniformly **etch** substrates using **etching** compn. comprising fluoride ion source and hydrogen ion source)

IT 7664-39-3, Hydrogen fluoride, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent); USES (Uses)
(method and system to uniformly **etch** substrates using **etching** compn. comprising fluoride ion source and hydrogen ion source)

IT 12033-89-5, Silicon nitride, processes
RL: PEP (Physical, engineering or chemical process); RCT (Reactant); TEM (Technical or engineered material use); PROC (Process); RACT (Reactant or reagent); USES (Uses)
(method and system to uniformly **etch** substrates using **etching** compn. comprising fluoride ion source and hydrogen ion source)

IT 7631-86-9, Silicon dioxide, processes
RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(method and system to uniformly **etch** substrates using **etching** compn. comprising fluoride ion source and hydrogen ion source)

RE.CNT 9 THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS RECORD

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(2) Deckert, C; US 4269654 A 1981 CAPLUS
(3) Gaulhofer, E; SOLID STATE TECHNOLOGY 1991, V34(5), P57 CAPLUS
(4) Lee, K; WO 9831768 A 1998 CAPLUS
(5) Muraoka, H; US 5681398 A 1997 CAPLUS
(6) Park, J; US 5087323 A 1992
(7) Schnegg, A; US 4971654 A 1990 CAPLUS
(8) Stmicroelectronics Sa; FR 2769248 A 1999 CAPLUS
(9) Ziger, D; US 5472562 A 1995 CAPLUS

L26 ANSWER 9 OF 18 CAPLUS COPYRIGHT 2002 ACS

AN 2000:209784 CAPLUS

DN 132:244962

TI Process for wet **etching** a **semiconductor** structure

IN Claussen, Wilhelm; Vogt, Mirko; Lorenz, Barbara; Sperlich, Hans-peter; Penner, Klaus

PA Siemens A.-G., Germany

SO Eur. Pat. Appl., 7 pp.
CODEN: EPXXDW

DT Patent

LA German

IC ICM H01L021-311
ICS H01L021-033; H01L021-027

CC 76-3 (Electric Phenomena)

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE

PI EP 989598 A2 20000329 EP 1999-117981 19990915
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO
DE 19844102 A1 20000406 DE 1998-19844102 19980925
DE 19844102 C2 20000720
TW 460974 B 20011021 TW 1999-88116195 19990920
US 6245640 B1 20010612 US 1999-407263 19990927
PRAI DE 1998-19844102 A 19980925
AB A dielec. antireflective coating is applied to a doped silicon oxide hard mask film using PECVD without interrupting the vacuum. The silicon oxide film is then structured into a hard mask and deep trench **etching** is, for example, applied. The hard mask is removed in a HF/H2SO4-mixt. or in a HF/ethylene-glycol mixt. at a high **etching** rate. By the application of a HF/ethylene-glycol mixt. an intermediate film under the mask can also be removed to a pre-detd. extent. This integration of two wet **etching** steps represent a great simplification compared to the existing art of wet **etching** in two steps.
ST wet **etching semiconductor** structure dielec antireflective coating silicon oxide; PECVD antireflective coating doped silicon oxide hard mask; hydrogen fluoride sulfuric acid ethylene glycol **etchant semiconductor** structure
IT Electric insulators
(antireflective film; process for wet **etching** a **semiconductor** structure)
IT Vapor deposition process
(plasma; process for wet **etching** a **semiconductor** structure)
IT Antireflective films
Doping
Etching
Etching masks
Semiconductor devices
Vacuum
(process for wet **etching** a **semiconductor** structure)
IT 7631-86-9, Silica, processes
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(process for wet **etching** a **semiconductor** structure)
IT **107-21-1**, Ethylene-glycol, processes 7664-39-3, Hydrogen fluoride, processes **7664-93-9**, Sulfuric acid, processes
RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(process for wet **etching** a **semiconductor** structure)

L26 ANSWER 10 OF 18 CAPLUS COPYRIGHT 2002 ACS
AN 1999:753440 CAPLUS
DN 131:359104
TI Stripping compositions for removing plasma **etching** residues from **semiconductor** substrates
IN Wojtczak, William A.; Guan, George; Nguyen, Long
PA Advanced Chemical Systems International, Inc., USA
SO PCT Int. Appl., 15 pp.
CODEN: PIXXD2
DT Patent
LA English
IC ICM G03F007-30
ICS G03F007-32
CC 76-3 (Electric Phenomena)
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI WO 9960447	A1	19991125	WO 1999-US10895	19990517
W: CA, ID, IL, JP, KR, SG				

RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE

EP 1125168 A1 20010822 EP 1999-924300 19990517

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI

US 6306807 B1 20011023 US 1999-312933 19990517

JP 2002516476 T2 20020604 JP 2000-550002 19990517

US 2001008878 A1 20010719 US 2001-801543 20010307

PRAI US 1998-85879P P 19980518

US 1999-312933 A1 19990517

WO 1999-US10895 W 19990517

AB The present invention comprises formulations for stripping wafer residues which originate from a halogen based plasma metal **etching** followed by O plasma ashing. The formulations contain the following general components (wt. %): Boric Acid 2-17 %, Org. amine or mixt. of amines 35-70 %, H2O 20-45 %, Glycol solvent (optional) 0-5 %, Chelating agent (optional) 0-17%. The preferred amines are: Monoethanolamine (MEA), Triethanolamine (TEA).

ST stripping compn plasma **etching** residue; boric acid stripping compn plasma **etching** residue; org amine stripping compn plasma **etching** residue; glycol stripping compn plasma **etching** residue; chelating agent stripping compn plasma **etching** residue

IT Chelating agents
(in stripping compns. for removing plasma **etching** residues from **semiconductor** substrates)

IT Amines, uses
Glycols, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(in stripping compns. for removing plasma **etching** residues from **semiconductor** substrates)

IT Halogens
RL: RCT (Reactant); RACT (Reactant or reagent)
(plasma **etchants**; stripping compns. for removing plasma **etching** residues from **semiconductor** substrates)

IT **Etching**
(plasma; stripping compns. for removing plasma **etching** residues from **semiconductor** substrates)

IT Cleaning solvents
Composition
Mixtures
Scouring agents
Semiconductor device fabrication
(stripping compns. for removing plasma **etching** residues from **semiconductor** substrates)

IT 50-21-5, Lactic acid, uses 90-02-8, Salicylaldehyde, uses 102-71-6, Triethanolamine, uses **107-21-1**, Ethylene glycol, uses 120-80-9, Catechol, uses 141-43-5, Monoethanolamine, uses 5977-14-0, Acetoacetamide **10043-35-3**, Boric Acid, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(in stripping compns. for removing plasma **etching** residues from **semiconductor** substrates)

IT 7782-44-7, Oxygen, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(plasma **etchants**; stripping compns. for removing plasma **etching** residues from **semiconductor** substrates)

IT 7429-90-5, Aluminum, processes 7440-21-3, Silicon, processes 7631-86-9, Silica, processes 25583-20-4, Titanium mononitride
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(stripping compns. for removing plasma **etching** residues from **semiconductor** substrates)

RE.CNT 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

(1) Lenack; US 4956110 1990 CAPLUS
(2) Marx; US 4759872 1988 CAPLUS

L26 ANSWER 11 OF 18 CAPLUS COPYRIGHT 2002 ACS
AN 1999:664763 CAPLUS
DN 131:315551
TI Fabrication of smooth GaN-based laser facets
AU Stocker, D. A.; Schubert, E. F.; Boutros, K. S.; Redwing, J. M.
CS Center for Photonics Research, Boston University, Boston, MA, 02215, USA
SO Materials Research Society Symposium Proceedings (1999), 537(GaN and Related Alloys), G7.5/1-G7.5/6
CODEN: MRSPDH; ISSN: 0272-9172
PB Materials Research Society
DT Journal
LA English
CC 73-10 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 72, 76
AB A method is presented for fabricating fully wet-**etched** InGaN/GaN laser cavities using photoenhanced electrochem. wet **etching** followed by crystallog. wet **etching**. Crystallog. wet chem. **etching** of n- and p-type GaN grown on c-plane sapphire is achieved using H3PO4 and various hydroxides, with **etch** rates .ltoreq.3.2 .mu.m/min. The crystallog. GaN **etch** planes are {0001}, {10.hivin.10}, {10.hivin.1.hivin.1}, {10.hivin.1.hivin.2}, and {10.hivin.13}. The vertical {10.hivin.10} planes appear perfectly smooth when viewed with a field-effect scanning electron microscope (FESEM), indicating a surface roughness <5 nm, suitable for laser facets. The **etch** rate and crystallog. nature for the various **etching** solns. are independent of cond., as shown by seamless **etching** of a p-GaN/undoped, high-resistivity GaN homojunction.
ST gallium nitride laser facet **etching**; photoenhanced **etching** potassium hydroxide gallium nitride
IT **Etching**
(electrochem., photoenhanced; of smooth laser facets on gallium nitride based cavities)
IT **Etching**
(photoenhanced **etching** of smooth laser facets on gallium nitride based cavities)
IT **Semiconductor** device fabrication
Semiconductor lasers
Surface roughness
(wet **etching** of smooth laser facets on gallium nitride based cavities)
IT 75-59-2, Tetramethylammonium hydroxide 77-98-5, Tetraethylammonium hydroxide
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(**etching** rate of gallium nitride in)
IT 1310-73-2, Sodium hydroxide, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(**etching** rate of gallium nitride in NaOH/ethylene glycol)
IT 1310-58-3, Potassium hydroxide, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(**etching** rate of gallium nitride in molten potassium hydroxide and KOH/ethylene glycol)
IT **107-21-1**, 1,2-Ethanediol, uses
RL: NUU (Other use, unclassified); USES (Uses)
(**etching** rate of gallium nitride using potassium hydroxide or sodium hydroxide in)
IT 1344-28-1, Aluminum oxide (Al2O3), uses
RL: DEV (Device component use); USES (Uses)
(laser substrate; wet **etching** of smooth laser facets on gallium nitride based cavities)

IT 64-19-7, Acetic acid, processes 7647-01-0, Hydrochloric acid, processes **7664-93-9**, Sulfuric acid, processes 7697-37-2, Nitric acid, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(no measurable **etching** of gallium nitride in)

IT 7440-21-3, Silicon, uses
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
(wet **etching** of silicon-doped indium gallium nitride laser cavity)

IT 25617-97-4, Gallium nitride (GaN) 156309-21-6, Gallium indium nitride (Ga0.91In0.09N)
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process); USES (Uses)
(wet **etching** of smooth laser facets on gallium nitride based cavities)

IT **7664-38-2**, Phosphoric acid, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(wet **etching** of smooth laser facets on gallium nitride based cavities)

RE.CNT 17 THERE ARE 17 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

(1) Binet, F; Appl Phys Lett 1998, V72, P960 CAPLUS
(2) Gillis, H; JOM 1996, V48(8), P50 CAPLUS
(3) Kneissl, M; Appl Phys Lett 1998, V72, P1539 CAPLUS
(4) Kozawa, T; J Electrochem Soc 1996, V143, PL17 CAPLUS
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(10) Seelmann-Eggebert, M; Appl Phys Lett 1997, V71, P2635 CAPLUS
(11) Shintani, A; J Electrochem Soc 1976, V123, P706 CAPLUS
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(13) Stocker, D; Appl Phys Lett 1998, V73, P2654 CAPLUS
(14) Stocker, D; Electron Lett 1998, V34, P373 CAPLUS
(15) Vartuli, C; Solid-State Electronics 1997, V41, P1947 CAPLUS
(16) Youtsey, C; Appl Phys Lett 1998, V72, P560 CAPLUS
(17) Zolper, J; MRS Bulletin 1997, V22(2), P36 CAPLUS

L26 ANSWER 12 OF 18 CAPLUS COPYRIGHT 2002 ACS

date

AN 1999:538084 CAPLUS

DN 131:152697

TI Device and method for wet-**etching** of **semiconductor** disks

IN Sumnitsch, Franz; Wagner, Gerald

PA SEZ Semiconductor-Equipment Zubehoer fuer die Halbleiterfertigung A.-G., Austria

SO Ger. Offen., 8 pp.
CODEN: GWXXBX

DT Patent

LA German

IC ICM H01L021-304
ICS C23F001-16

CC 76-3 (Electric Phenomena)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DE 19805525	A1	19990819	DE 1998-19805525	19980211
	DE 19805525	C2	20020613		
	IT 1309069	B1	20020116	IT 1999-MI120	19990122
	GB 2334374	A1	19990818	GB 1999-1810	19990127
	JP 11274147	A2	19991008	JP 1999-27834	19990204

JP 3242082 B2 20011225
TW 421830 B 20010211 TW 1999-88102080 19990210
US 6162739 A 20001219 US 1999-248094 19990211
PRAI DE 1998-19805525 A 19980211
AB An **etching** medium contains an agent which affects viscosity, surface energy, and/or vapor pressure of the **etching** medium in addn. to HF or a (HF + NH4F) combination which is effective for wet **etching** of **semiconductor** disks, esp. Si wafers. During **etching**, a SiO2 layer is removed from the upper side, an edge, and a defined edge area of the lower side of the Si wafer. Under-**etching** in a defined area attains that the edge of the SiO2 layer remaining on the bottom side of the wafer is smooth.
ST wet **etching semiconductor**; silicon wafer wet **etching**
IT **Etching**
(of **semiconductor** disks)
IT **Semiconductor** devices
(wet-**etching** of)
IT 50-21-5, Lactic acid, uses 56-81-5, Glycerol, uses 64-17-5, Ethanol, uses 64-18-6, Formic acid, uses 64-19-7, Acetic acid, uses 65-85-0, Benzoic acid, uses 67-56-1, Methanol, uses 67-63-0, Isopropanol, uses 67-64-1, Acetone, uses 71-36-3, Butanol, uses 77-92-9, Citric acid, uses 79-09-4, Propionic acid, uses **107-21-1**, Ethylene glycol, uses 107-92-6, Butyric acid, uses 111-46-6, Diethylene glycol, uses 124-38-9, Carbon dioxide, uses 141-78-6, Acetic acid ethyl ester, uses 144-55-8, Sodium bicarbonate, uses 144-62-7, Oxalic acid, uses 7647-01-0, Hydrochloric acid, uses **7664-38-2**, Phosphoric acid, uses **7664-93-9**, Sulfuric acid, uses
RL: MOA (Modifier or additive use); USES (Uses)
(in **etching** medium for silicon wafers)
IT 7664-39-3, Hydrofluoric acid, processes 12125-01-8, Ammonium fluoride
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(in wet-**etching** of silicon wafers)
IT 7440-21-3, Silicon, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(wet-**etching** of silicon wafers)
RE.CNT 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
(1) Anon; JP 09181026 A
(2) Anon; US 4087367
(3) Anon; US 4795582 CAPLUS
(4) Anon; US 4871422 CAPLUS
(5) Anon; US 5439553 CAPLUS
(6) Gaulhofer, E; Solid State Technology 1991, 219, P57
(7) Monk, D; J Electrochem Soc 1994, V141(1), P264 CAPLUS

L26 ANSWER 13 OF 18 CAPLUS COPYRIGHT 2002 ACS
AN 1997:719819 CAPLUS
DN 128:17842
TI Cleaning solutions for **semiconductor** circuits and fabrication of circuit thereof
IN Hasemi, Takashi; Ikeda, Hidetoshi; Aoyama, Tetsuo
PA Mitsubishi Gas Chemical Co., Inc., Japan
SO Jpn. Kokai Tokkyo Koho, 5 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM H01L021-304
ICS H01L021-027; H01L021-308
CC 76-3 (Electric Phenomena)
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE

PI JP 09283481 A2 19971031 JP 1996-91520 19960412

AB The title cleaning solns. are an aq. soln. contg. 0.1-40 wt.% H3PO4 oxo-acid and anticorrosive org. compd. 5-50 wt.%. The cleaning solns. are applied to removal of photoresist residues remained on the sidewalls of a photoresist in the title fabrication. The cleaning eliminates after-corrosions by removing the resist residues which are generated during dry **etching**.

ST phosphoric acid oxoacid cleaning **semiconductor** circuit; org anticorrosive cleaning resist residue removal

IT Electric circuits
Semiconductor materials
(cleaning solns. for **semiconductor** circuits and fabrication of circuit thereof)

IT Cleaning
(**etching** residue removal, **semiconductor** circuits, soln. for; cleaning solns. for **semiconductor** circuits and fabrication of circuit thereof)

IT Photoresists
(**etching** residue removal; cleaning solns. for **semiconductor** circuits and fabrication of circuit thereof)

IT Glycerides, properties
RL: MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process); USES (Uses)
(org. corrosion inhibitor; cleaning solns. for **semiconductor** circuits and fabrication of circuit thereof)

IT Corrosion inhibitors
(org.; cleaning solns. for **semiconductor** circuits and fabrication of circuit thereof)

IT Acids, properties
RL: NUU (Other use, unclassified); PRP (Properties); USES (Uses)
(oxo, **etching** residue removal by; cleaning solns. for **semiconductor** circuits and fabrication of circuit thereof)

IT **Etching**
(plasma, residue removal from; cleaning solns. for **semiconductor** circuits and fabrication of circuit thereof)

IT 7440-32-6, Titanium, properties 25583-20-4, Titanium nitride (TiN) 37254-60-7
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process); USES (Uses)
(circuit multilayer, corrosion resistance; cleaning solns. for **semiconductor** circuits and fabrication of circuit thereof)

IT **7664-38-2**, Phosphoric acid, properties
RL: NUU (Other use, unclassified); PRP (Properties); USES (Uses)
(**etching** residue removal by; cleaning solns. for **semiconductor** circuits and fabrication of circuit thereof)

IT **50-70-4**, Sorbitol, properties 68-12-2, N,N-Dimethylformamide, properties
RL: MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process); USES (Uses)
(org. corrosion inhibitor; cleaning solns. for **semiconductor** circuits and fabrication of circuit thereof)

L26 ANSWER 14 OF 18 CAPLUS COPYRIGHT 2002 ACS

AN 1997:436984 CAPLUS

DN 127:143452

TI Investigation of anodic dissolution of mercury cadmium telluride by nonsteady-state method

AU Baibatyrov, E. N.; Mambetkaziev, E. A.; Nikitin, A. N.

CS Kazakhstan

SO Vestnik Ministerstva Nauki--Akademii Nauk Respubliki Kazakhstan (1996), (6), 42-47
CODEN: VMRKFT

PB Gylym

DT Journal
LA Russian
CC 76-3 (Electric Phenomena)
Section cross-reference(s): 72
AB Initial dissoln. and surface **etching** in the Cd-Hg telluride were detd. in aq.-org. soln. with H2SO4 and ethylene glycol, with or without the pretreatment by cathodic polarization at 0.1 V. The specimens were single-crystal chips of Cr0.2Hg0.8Te in electrochem cell. The initial surface dissoln. was assocd. with ionization of a Cd atom and the assocd. formation of a vacancy, followed by the vacancy interaction with Hg or Te for their dissoln. Potentiostatic curves of anodic dissoln. were evaluated.
ST mercury cadmium telluride anodic dissoln; telluride **semiconductor** anodic dissoln test
IT **Etching**
(of telluride; anodic dissoln. of mercury cadmium telluride single crystal in acidic soln.)
IT **Semiconductor** materials
(telluride; anodic dissoln. of mercury cadmium telluride single crystal in acidic soln.)
IT **107-21-1**, Ethylene glycol, uses **7664-93-9**, Sulfuric acid, uses
RL: MOA (Modifier or additive use); USES (Uses)
(corrosion by soln. contg.; anodic dissoln. of mercury cadmium telluride single crystal in acidic soln.)
IT 29870-72-2, Cadmium mercury telluride
RL: PRP (Properties)
(**semiconductor**; anodic dissoln. of mercury cadmium telluride single crystal in acidic soln.)

L26 ANSWER 15 OF 18 CAPLUS COPYRIGHT 2002 ACS
AN 1995:856638 CAPLUS
DN 123:270287
TI **Semiconductor** laser and its manufacture
IN Oosawa, Yasuhiro
PA Ricoh Kk, Japan
SO Jpn. Kokai Tokkyo Koho, 8 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM H01S003-18
ICS H01L033-00
CC 73-10 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 76
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 07202339	A2	19950804	JP 1993-337404	19931228

AB The title laser consists of a 1st elec. cond. (x)-type **semiconductor** substrate successively coated with an x-type 1st cladding layer, an active layer, a 2nd elec. cond. (y)-type 2nd cladding layer, a y-type 3rd cladding layer, a y-type striped mesa-structure 4th cladding layer, a y-type striped mesa-structure 5th cladding layer, and a y-type striped mesa-structure cap layer, where the stripe width of the 4th cladding layer is narrower than that of the 5th cladding layer and the cap layer. The laser is manufd. by nonselectively **etching** to form striped mesas and selectively **etching** to form an undercut. Increase of contact resistance on the mesa was prevented.
ST **semiconductor** laser striped mesa structure; **etching** **semiconductor** laser mesa structure
IT **Etching**
Lasers

(**semiconductor** laser and its manuf. with **etching**)

IT 1303-00-0, Gallium arsenide, uses 12774-40-2, Aluminum gallium arsenide (Al0.5Ga0.5As) 106070-25-1, Gallium indium arsenide [(Ga,In)As] 106218-96-6, Aluminum gallium arsenide (Al0.4Ga0.6As) 106312-09-8, Aluminum gallium arsenide (Al0.2Ga0.8As) 106389-87-1, Aluminum gallium arsenide (Al0.35Ga0.65As) 106804-30-2, Aluminum gallium arsenide (Al0.6Ga0.4As) 107477-00-9, Aluminum gallium arsenide (Al0.37Ga0.63As)
RL: DEV (Device component use); USES (Uses)
(**semiconductor** laser and its manuf. with **etching**)

IT 75-46-7, Trifluoromethane **107-21-1**, Ethylene glycol, uses **7664-38-2**, Phosphoric acid, uses 7664-39-3, Hydrofluoric acid, uses 7722-84-1, Hydrogen peroxide, uses 7782-50-5, Chlorine, uses 12125-01-8, Ammonium fluoride
RL: NUU (Other use, unclassified); USES (Uses)
(**semiconductor** laser and its manuf. with **etching**)

L26 ANSWER 16 OF 18 CAPLUS COPYRIGHT 2002 ACS
AN 1995:490358 CAPLUS
DN 122:228726
TI Rinsing solutions for resist removal in manufacture of **semiconductor** devices and its
IN Goto, Hideto; Myazaki, Masao; Mori, Kyoto
PA Texas Instruments Japan, Japan; Kanto Kagaku
SO Jpn. Kokai Tokkyo Koho, 6 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM H01L021-304
ICS C11D017-00; C23G005-032; H05K003-26
CC 76-3 (Electric Phenomena)
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 07037846	A2	19950207	JP 1993-224895	19930722

AB The rinsing solns. contain water-sol. monohydric alcs. and acids. The manufg. process involves the following steps: (1) forming a C-contg. Al conductive layer on a **semiconductor** substrate, (2) **etching** the conductive layer with a resist mask, (3) removing the resist with alkali, and (4) rinsing with the soln. The rinsing soln. is noncorrosive to Al-Si-Cu wiring.

ST noncorrosive rinse soln resist **semiconductor**; acid alc rinsing **semiconductor** device

IT **Semiconductor** devices
(noncorrosive rinsing soln. for alk. resist removal in **semiconductor** device manuf.)

IT **50-70-4**, D-Sorbitol, uses 64-17-5, Ethanol, uses 64-19-7, Acetic acid, uses 65-85-0, Benzoic acid, uses 67-56-1, Methanol, uses 67-63-0, Isopropyl alcohol, uses 144-62-7, Oxalic acid, uses **7664-93-9**, Sulfuric acid, uses 7697-37-2, Nitric acid, uses 27176-87-0, Dodecylbenzenesulfonic acid
RL: TEM (Technical or engineered material use); USES (Uses)
(noncorrosive rinsing soln. for alk. resist removal in **semiconductor** device manuf.)

IT 37254-60-7
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(wiring; noncorrosive rinsing soln. for alk. resist removal in **semiconductor** device manuf.)

lacks alcohol

L26 ANSWER 17 OF 18 CAPLUS COPYRIGHT 2002 ACS
AN 1994:233206 CAPLUS
DN 120:233206
TI Exposure of boundaries in epitaxial structures based on AIIIBV

AU Vlasukova, L. A.
CS Beloruss. Gos. Univ., Minsk, Belarus
SO Neorg. Mater. (1993), 29(12), 1597-600
CODEN: NMATEI
DT Journal
LA Russian
CC 76-3 (Electric Phenomena)
Section cross-reference(s): 67, 75
AB Different **etchant** solns., were tested for revealing film boundaries in GaAs and InP epitaxial films. The optimum **etching** conditions were detd. The effect of film substrate conditions on the **etching** is described. A comparison was made between anodic oxidn. and selective **etching** and the results used to explain the formation of pn junctions during epitaxy.
ST **etching** gallium arsenide indium phosphide; film epitaxial boundary **etching**; anodic oxidn junction epitaxial film
IT **Semiconductor** junctions
(from epitaxy of gallium arsenide or indium phosphide)
IT **Etching**
(of films boundaries in Group IIIA pnictide epitaxial films)
IT Anodization
(of gallium arsenide and indium phosphide)
IT Epitaxy
(of gallium arsenide and indium phosphide, **etching** of interface boundaries after)
IT Polishing
(of substrates prior to epitaxy)
IT **107-21-1**, Ethylene glycol, uses
RL: USES (Uses)
(**etchant** contg., for exposure of boundaries in gallium arsenide layers)
IT 87-69-4, Tartaric acid, uses 1310-58-3, Potassium hydroxide, uses 1333-82-0, Chromium oxide (CrO3) **7664-38-2**, Phosphoric acid, uses 7664-39-3, Hydrogen fluoride, uses **7664-93-9**, Sulfuric acid, uses 7697-37-2, Nitric acid, uses 7761-88-8, Silver nitrate, uses 7778-50-9, Potassium dichromate 7783-28-0, Diammonium hydrogen phosphate 13746-66-2, Tripotassium hexacyanoferrate
RL: USES (Uses)
(**etchant**, for exposure of boundaries in gallium arsenide layers)
IT 1303-00-0, Gallium monoarsenide, miscellaneous 22398-80-7, Indium monophosphide, miscellaneous
RL: MSC (Miscellaneous)
(**etching** revelation of boundaries in epitaxial films of)

L26 ANSWER 18 OF 18 CAPLUS COPYRIGHT 2002 ACS
AN 1989:85075 CAPLUS
DN 110:85075
TI Fabrication of buried-heterostructure gallium arsenide **semiconductor** laser
IN Kunihara, Kenji
PA Fuji Electric Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 7 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM H01S003-18
ICA H01L021-306
CC 73-10 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 76
FAN.CNT 1
PATENT NO. KIND DATE APPLICATION NO. DATE

PI	JP 63222486	A2	19880916	JP 1987-55786	19870311

AB A process for making a buried-heterostructure **semiconductor** laser, suited for use as a light source in optical communication and information processing, comprises the steps of: forming a 1st cladding layer, an active layer, and a 2nd cladding layer thinner thean the 1st cladding layer; photoetching the structure formed to create a mesa stripe; filling in the **etched** portions of the structure with a 3rd cladding layer extending up to the 2nd cladding layer; and forming a contact layer above the 2nd and 3rd cladding layers.

ST buried heterostructure **semiconductor** laser fabrication; aluminum gallium arsenide **semiconductor** laser

IT Lasers
(aluminum gallium arsenide, buried heterostructure)

IT 1303-00-0, Gallium arsenide, uses and miscellaneous
RL: USES (Uses)
(buried-heterostructure **semiconductor** laser)

IT 106495-81-2, Aluminum gallium arsenide (Al0.45Ga0.55As) 106604-41-5, Aluminum gallium arsenide (Al0.13Ga0.87As)
RL: PRP (Properties)
(buried-heterostructure **semiconductor** laser)

IT **107-21-1**, Ethylene glycol, uses and miscellaneous
7664-38-2, Phosphoric acid, uses and miscellaneous 7722-84-1, Hydrogen peroxide, uses and miscellaneous
RL: USES (Uses)
(**etchant** contg., for photoetching of buried-heterostructure **semiconductor** laser)

=> d l27,1-38,all

L27 ANSWER 1 OF 38 CAPLUS COPYRIGHT 2002 ACS

date AN 2002:332477 CAPLUS

DN 136:333919

TI Method and device for cleaning a **semiconductor** wafer by chemical-mechanical polishing

IN Bonsdorf, Grit; Dickenscheid, Wolfgang

PA Infineon Technologies Ag, Germany

SO PCT Int. Appl., 21 pp.
CODEN: PIXXD2

DT Patent

LA German

IC ICM H01L021-321
ICS H01L021-3105

CC 76-3 (Electric Phenomena)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2002035598	A1	20020502	WO 2001-EP11582	20011008
	W: JP, KR, US				
	RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR				
	DE 10052762	A1	20020516	DE 2000-10052762	20001025
PRAI	DE 2000-10052762	A	20001025		

AB The cleaning of a surface of a **semiconductor** wafer by means of a chem.-mech. polishing process with continuous rotation is achieved with an integrated continuous method, whereby the surface is 1st **etched**, then rinsed and finally dried.

ST **semiconductor** material cleaning chem mech polishing

IT Polishing
(app.; method and device for cleaning a **semiconductor** wafer by chem.-mech. polishing)

IT Polishing

(chem.-mech.; method and device for cleaning a **semiconductor** wafer by chem.-mech. polishing)

IT Cleaning
Drying
Etching
Semiconductor materials
(method and device for cleaning a **semiconductor** wafer by chem.-mech. polishing)

IT Washing
(rinsing; method and device for cleaning a **semiconductor** wafer by chem.-mech. polishing)

IT **67-63-0**, Isopropanol, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(drying agent; method and device for cleaning a **semiconductor** wafer by chem.-mech. polishing)

IT 7664-39-3, Hydrogen fluoride, processes **7664-93-9**, Sulfuric acid, processes 7722-84-1, Hydrogen peroxide, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(**etchant**; method and device for cleaning a **semiconductor** wafer by chem.-mech. polishing)

RE.CNT 9 THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE
(1) Ali, I; US 5996594 A 1999 CAPLUS
(2) Anon; PATENT ABSTRACTS OF JAPAN 1998, V1998(02)
(3) Canon Inc; JP 09270412 A 1997
(4) Hayakawa, H; US 5779520 A 1998
(5) Imec Inter Uni Micro Electr; EP 0905747 A 1999 CAPLUS
(6) Sez Semiconduct Equip Zubehoer; EP 0938133 A 1999 CAPLUS
(7) Sumnitsch, F; US 4903717 A 1990
(8) Ueno, K; US 5882433 A 1999
(9) Yamasaka, M; US 5997653 A 1999

L27 ANSWER 2 OF 38 CAPLUS COPYRIGHT 2002 ACS
AN 2002:217417 CAPLUS
DN 137:9993
TI Estimation of VOCs emission factor for **semiconductor** manufacturing processes
AU Chein, H.; Chen, M.-H.
CS Center for Environmental, Safety and Health Technology, Industrial Technology Research Institute, Taiwan
SO Advances in Air Pollution (2001), 10(Air Pollution IX), 491-500
CODEN: AAPOFM; ISSN: 1369-5886
PB WIT Press
DT Journal
LA English
CC 59-2 (Air Pollution and Industrial Hygiene)
Section cross-reference(s): 74, 76

AB The **semiconductor** manufg. industry contributed significantly to economic growth and became the most important industry in Taiwan; however, emission of hazardous air pollutants (HAP) produced by this industry is increasingly deteriorating ambient air quality. A great amt. of volatile org. compds. (VOC) can be produced and emitted with waste gases from **semiconductor** manufg. processes, e.g., cleaning, **etching**, and photolithog. This study estd. total VOC emissions from the **semiconductor** industry based on established emission factors, defined as the emission rate (kg/mo) divided by the amt. of chems. used (L/mo). The VOC emission rate was measured with a continuous emission monitor (CEM). The amt. of chems. used was adopted from data reported to the Department of Environmental Protection by **semiconductor** factories in accordance with regulations. A total of 9 typical **semiconductor** facilities were analyzed in a 6-mo period.

Preliminary results showed the VOC emission factor was 0.0481 .+-. 0.0179 kg/L. A linear regression function was proposed to fit the data; results are presented and discussed.

ST estg volatile org emission **semiconductor** manufg waste gas Taiwan; air pollution volatile org emission **semiconductor** manufg Taiwan

IT Standards, legal and permissive
(air quality; estg. volatile org. hazardous pollutant emission factors for air pollution by waste gas from **semiconductor** manufg. processes in Taiwan)

IT Air pollution
Electrophotographic developers
Semiconductor materials
(estg. volatile org. hazardous pollutant emission factors for air pollution by waste gas from **semiconductor** manufg. processes in Taiwan)

IT Volatile organic compounds
RL: OCU (Occurrence, unclassified); POL (Pollutant); OCCU (Occurrence)
(estg. volatile org. hazardous pollutant emission factors for air pollution by waste gas from **semiconductor** manufg. processes in Taiwan)

IT Waste gases
(**semiconductor** manufg.; estg. volatile org. hazardous pollutant emission factors for air pollution by waste gas from **semiconductor** manufg. processes in Taiwan)

IT Photolithography
(solns. for; volatile org. compds. in; estg. volatile org. hazardous pollutant emission factors for air pollution by waste gas from **semiconductor** manufg. processes in Taiwan)

IT **67-63-0**, Isopropyl alcohol, occurrence 67-64-1, Acetone, occurrence 107-21-1, 1,2-Ethanediol, occurrence 540-59-0, Ethene, 1,2-dichloro- 872-50-4, N-Methyl-2-pyrrolidinone, occurrence 1330-20-7, Xylene, occurrence 7647-01-0, Hydrochloric acid, occurrence 7664-39-3, Hydrofluoric acid, occurrence 7664-41-7, Ammonia, occurrence **7664-93-9**, Sulfuric acid, occurrence 7697-37-2, Nitric acid, occurrence
RL: OCU (Occurrence, unclassified); POL (Pollutant); OCCU (Occurrence)
(estg. volatile org. hazardous pollutant emission factors for air pollution by waste gas from **semiconductor** manufg. processes in Taiwan)

RE.CNT 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

(1) Anon; VLSI Manufacturing Technology 1995, P183
(2) CTCI Corporation/Environmental Protection Agency; Handbook for Estimation of Taiwan Air Pollutant Emission-SCC Emission Factor Listing Table 1996
(3) Department of Environmental Protection in Hsinchu County; The Project Report of Air Quality Improvement Project in Hsinchu Industry Parks 2000
(4) Environmental Protection Agency; Air Pollution Regulation and Emission Standard for Semiconductor Manufacturing Industry 2000
(5) Environmental Protection Agency; Handbook for Estimation of Taiwan Air Pollutant Emission 2000
(6) Tsai, C; Chinese Association for Aerosol Research in Taiwan 2000, P3

L27 ANSWER 3 OF 38 CAPLUS COPYRIGHT 2002 ACS

AN 2002:107888 CAPLUS

DN 136:159923

TI Methods of polishing, interconnect fabrication, and producing **semiconductor** devices

IN Kondo, Seiichi; Sakuma, Noriyuki; Homma, Yoshio

PA Hitachi, Ltd., Japan

SO U.S. Pat. Appl. Publ., 25 pp.
CODEN: USXXCO

DT Patent

LA English
IC ICM H01L021-461
NCL 438691000
CC 76-3 (Electric Phenomena)
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2002016073	A1	20020207	US 2001-828919	20010410
	JP 2002050595	A2	20020215	JP 2000-242750	20000804
PRAI	JP 2000-242750	A	20000804		

AB The present invention relates to polishing of a metal film, and in particular, to a method of polishing in an interconnect-fabrication process for producing **semiconductor** devices. The present invention provides a technique to reduce and suppress scratches and delamination, to suppress and control the development of dishing and erosion, and to polish at high polishing rate. Polishing is performed using a polishing soln., which contains an oxidizer, H3PO4, org. acid, a chem. to form inhibition layer, and H2O.

ST **semiconductor** device fabrication interconnection **etching** polishing

IT Polishing
(chem.-mech.; methods of polishing, interconnect fabrication, and producing **semiconductor** devices)

IT Corrosion inhibitors
Interconnections (electric)
Semiconductor device fabrication
Sputtering
(methods of polishing, interconnect fabrication, and producing **semiconductor** devices)

IT Carboxylic acids, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(polishing soln. component; methods of polishing, interconnect fabrication, and producing **semiconductor** devices)

IT 123-03-5, Cetylpyridinium chloride
RL: MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(anti-mildew, anti-bacterial **etchant** additive; methods of polishing, interconnect fabrication, and producing **semiconductor** devices)

IT 7440-50-8, Copper, uses
RL: DEV (Device component use); USES (Uses)
(interconnection; methods of polishing, interconnect fabrication, and producing **semiconductor** devices)

IT 12033-62-4, Tantalum nitride (TaN)
RL: DEV (Device component use); USES (Uses)
(methods of polishing, interconnect fabrication, and producing **semiconductor** devices)

IT 7440-21-3, Silicon, processes 7440-25-7, Tantalum, processes 7440-33-7, Tungsten, processes 7631-86-9, Silicon oxide, processes 25583-20-4, Titanium nitride (TiN)
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(methods of polishing, interconnect fabrication, and producing **semiconductor** devices)

IT **64-17-5**, Ethanol, processes 67-56-1, Methanol, processes **67-63-0**, Isopropyl alcohol, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(methods of polishing, interconnect fabrication, and producing **semiconductor** devices)

IT 50-21-5, .alpha.-Hydroxypropionic acid, processes 95-14-7,

1H-Benzotriazole 95-14-7D, 1H-Benzotriazole, derivs. 288-32-4, Imidazole, processes 2551-62-4, Sulfur hexafluoride 6303-21-5, Hypophosphorous acid **7664-38-2**, Orthophosphoric acid, processes 7722-84-1, Hydrogen peroxide, processes 9003-01-4D, Polyacrylic acid, ammonium salt 10343-62-1, Metaphosphoric acid 31212-28-9, Nitrobenzenesulfonic acid
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(polishing soln. component; methods of polishing, interconnect fabrication, and producing **semiconductor** devices)

dupe

L27 ANSWER 4 OF 38 CAPLUS COPYRIGHT 2002 ACS
AN 2002:31862 CAPLUS
DN 136:94681
TI Method of forming a thin gate silicon oxynitride dielectric layers of 7 angstrom thickness
IN Keating, Steven J.; Chau, Robert S.; Arghavani, Reza; Kavalieros, Jack T.; Barlage, Douglas W.
PA USA
SO U.S. Pat. Appl. Publ., 8 pp.
CODEN: USXXCO
DT Patent
LA English
IC ICM H01L029-76
ICS H01L029-94; H01L031-062; H01L031-113; H01L031-119; H01L023-58
NCL 257336000
CC 76-10 (Electric Phenomena)
Section cross-reference(s): 66
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI US 2002003258	A1	20020110	US 1998-208268	19981208

AB A method of forming a dielec. layer suitable for use as the gate dielec. layer in a MOSFET includes passivating the surface of a **semiconductor** substrate at a temp. .ltorsim.80.degree. and nitridizing the passivation layer. In particular embodiments, passivating a Si wafer includes forming a hydroxy-silicate layer at .apprx.24.degree.. In a further aspect of the present invention, an integrated circuit includes a plurality of insulated gate field effect transistors, in which various ones of the plurality of transistors have gate dielec. layers of the nitridized passivation layer.
ST gate ultra thin silicon oxynitride dielec layer nitriding passivation; MOSFET IGFET silicon oxynitride dielec film
IT Plasma
(N2 plasma nitridation; method of forming a thin gate silicon oxynitride dielec. layers of 7 angstrom thickness by nitriding passivated silicon surface)
IT Field effect transistors
(insulated-gate; method of forming a thin gate silicon oxynitride dielec. layers of 7 angstrom thickness by nitriding passivated silicon surface)
IT Dielectric films
Integrated circuits
MOSFET (transistors)
(method of forming a thin gate silicon oxynitride dielec. layers of 7 angstrom thickness by nitriding passivated silicon surface)
IT Rapid thermal annealing
(nitridation; method of forming a thin gate silicon oxynitride dielec. layers of 7 angstrom thickness by nitriding passivated silicon surface)
IT Neutralization
(of Si wafer surface by passivation; method of forming a thin gate silicon oxynitride dielec. layers of 7 angstrom thickness by nitriding passivated silicon surface)

IT **Etching**
(sacrificial layer removal; method of forming a thin gate silicon oxynitride dielec. layers of 7 angstrom thickness by nitriding passivated silicon surface)

IT Passivation
(silicon surface by hydroxy-silicate layer formation; method of forming a thin gate silicon oxynitride dielec. layers of 7 angstrom thickness by nitriding passivated silicon surface)

IT 7647-01-0, Hydrogen chloride, processes
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(H2O/H2O2/HCl passivation of Si wafer; method of forming a thin gate silicon oxynitride dielec. layers of 7 angstrom thickness by nitriding passivated silicon surface)

IT 1336-21-6, Ammonium hydroxide 7722-84-1, Hydrogen peroxide, processes
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(H2O/H2O2/NH4OH passivation of Si wafer; method of forming a thin gate silicon oxynitride dielec. layers of 7 angstrom thickness by nitriding passivated silicon surface)

IT 7782-44-7, Oxygen, processes 7782-50-5, Chlorine, processes
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(O2/Cl2 oxidn. to form sacrificial layer on Si wafer; method of forming a thin gate silicon oxynitride dielec. layers of 7 angstrom thickness by nitriding passivated silicon surface)

IT 11105-01-4, Silicon oxynitride
RL: CPS (Chemical process); DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(formation by nitriding hydroxy-silicate layer; method of forming a thin gate silicon oxynitride dielec. layers of 7 angstrom thickness by nitriding passivated silicon surface)

IT 12627-13-3, Silicate
RL: CPS (Chemical process); DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(hydroxy-, passivation layer on Si wafer; method of forming a thin gate silicon oxynitride dielec. layers of 7 angstrom thickness by nitriding passivated silicon surface)

IT 12033-89-5, Silicon nitride, uses
RL: DEV (Device component use); USES (Uses)
(in for side wall spacers; method of forming a thin gate silicon oxynitride dielec. layers of 7 angstrom thickness by nitriding passivated silicon surface)

IT 10028-15-6, Ozone, processes
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(ozonated water, passivation Si wafer surface; method of forming a thin gate silicon oxynitride dielec. layers of 7 angstrom thickness by nitriding passivated silicon surface)

IT **7664-38-2**, Phosphoric acid, processes **7664-93-9**, Sulfuric acid, processes 7697-37-2, Nitric acid, processes
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(passivation Si wafer surface; method of forming a thin gate silicon oxynitride dielec. layers of 7 angstrom thickness by nitriding passivated silicon surface)

IT 7727-37-9, Nitrogen, processes
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(plasma nitridation; method of forming a thin gate silicon oxynitride dielec. layers of 7 angstrom thickness by nitriding passivated silicon surface)

IT 7440-21-3, Silicon, processes

RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(polycryst. gate electrode, substrate; method of forming a thin gate silicon oxynitride dielec. layers of 7 angstrom thickness by nitriding passivated silicon surface)

IT 7664-41-7, Ammonia, processes
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(rapid thermal nitridation; method of forming a thin gate silicon oxynitride dielec. layers of 7 angstrom thickness by nitriding passivated silicon surface)

IT **67-63-0**, Isopropyl alcohol, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(vapor jet drying passivated Si wafer; method of forming a thin gate silicon oxynitride dielec. layers of 7 angstrom thickness by nitriding passivated silicon surface)

IT 7664-39-3, Hydrogen fluoride, processes 7732-18-5, Water, processes
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(water/HF **etching** for sacrificial oxide layer removal; method of forming a thin gate silicon oxynitride dielec. layers of 7 angstrom thickness by nitriding passivated silicon surface)

L27 ANSWER 5 OF 38 CAPLUS COPYRIGHT 2002 ACS
AN 2002:10842 CAPLUS
DN 136:91435
TI Method to restore hydrophobicity in dielectric films and materials
IN Hacker, Nigel P.; Thomas, Michael; Drage, James S.
PA Honeywell International, Inc., USA
SO PCT Int. Appl., 34 pp.
CODEN: PIXXD2
DT Patent
LA English
IC ICM H01L021-316
CC 66-6 (Surface Chemistry and Colloids)
Section cross-reference(s): 76

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI WO 2002001621	A2	20020103	WO 2001-US19466	20010619
WO 2002001621	A3	20020321		

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG

PRAI US 2000-214219P P 20000623

AB SiO2 dielec. films, whether nonporous foamed SiO2 dielecs. or nonporous SiO2 dielecs. are readily damaged by fabrication methods and reagents that reduce or remove hydrophobic properties from the dielec. surface. The invention provides for methods of imparting hydrophobic properties to such damaged SiO2 dielec. films present on a substrate. The invention also provides plasma-based methods for imparting hydrophobicity to both new and damaged SiO2 dielec. films. **Semiconductor** devices prepd. by the inventive processes are also provided.

ST restore hydrophobicity silica dielec film surface modification

IT Alcohols, processes
RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC

(Process); RACT (Reactant or reagent)
(amino, **etchant**; method to restore hydrophobicity in dielec. films and materials)

IT Polishing
(chem.-mech.; method to restore hydrophobicity in dielec. films and materials)

IT Sputtering
(copper; method to restore hydrophobicity in dielec. films and materials)

IT Acids, processes
Alcohols, processes
Amides, processes
Amines, processes
Bases, processes
RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(**etchant**; method to restore hydrophobicity in dielec. films and materials)

IT Silsesquioxanes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(film; method to restore hydrophobicity in dielec. films and materials)

IT Dielectric films
Semiconductor device fabrication
(method to restore hydrophobicity in dielec. films and materials)

IT Ashing
(oxygen; method to restore hydrophobicity in dielec. films and materials)

IT Vapor deposition process
(plasma, silicon nitride; method to restore hydrophobicity in dielec. films and materials)

IT Plasma
(surface treatment; method to restore hydrophobicity in dielec. films and materials)

IT Amines, processes
RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(triamines, **etchant**; method to restore hydrophobicity in dielec. films and materials)

IT 12033-89-5, Silicon nitride, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(PECVD; method to restore hydrophobicity in dielec. films and materials)

IT 7440-25-7, Tantalum, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(barrier liner film; method to restore hydrophobicity in dielec. films and materials)

IT 7440-50-8, Copper, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(copper seed layer; method to restore hydrophobicity in dielec. films and materials)

IT 60-00-4, processes **64-17-5**, Ethanol, processes 64-18-6, Formic acid, processes 64-19-7, Acetic acid, processes **67-63-0**, 2-Propanol, processes 68-12-2, Dimethylformamide, processes 75-59-2, Tetramethylammonium hydroxide 100-36-7, N,N-Diethylethylenediamine 107-15-3, Ethylenediamine, processes 111-40-0, Diethylenetriamine 121-44-8, Triethylamine, processes 127-19-5, Dimethylacetamide 141-43-5, Ethanolamine, processes 872-50-4, processes 1336-21-6, Ammonium hydroxide **7664-38-2**, Phosphoric acid, processes 7664-39-3, Hydrofluoric acid, processes **7664-93-9**, Sulfuric acid, processes 7803-49-8, Hydroxyl amine, processes 10581-12-1, Tetramethylammonium acetate 12125-01-8, Ammonium fluoride 14475-38-8, Silanol
RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC

(Process); RACT (Reactant or reagent)
(**etchant**; method to restore hydrophobicity in dielec. films and materials)

IT 7697-37-2, Nitric acid, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(in silica precursor; method to restore hydrophobicity in dielec. films and materials)

IT 174794-67-3, Amberjet 4200
RL: CAT (Catalyst use); USES (Uses)
(method to restore hydrophobicity in dielec. films and materials)

IT 385809-99-4, EKC 630
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(method to restore hydrophobicity in dielec. films and materials)

IT 7631-86-9, Silica, processes
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(nanoporous film; method to restore hydrophobicity in dielec. films and materials)

IT 75-79-6, Methyltrichlorosilane 10025-78-2, Trichlorosilane
RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(nanoporous silica film precursor; method to restore hydrophobicity in dielec. films and materials)

IT 74-82-8, Methane, processes 1333-74-0, Hydrogen, processes 7727-37-9, Nitrogen, processes 7782-41-4, Fluorine, processes 7782-44-7, Oxygen, processes
RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(plasma treatment of silica film; method to restore hydrophobicity in dielec. films and materials)

IT 7440-37-1, Argon, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(silane plasma; method to restore hydrophobicity in dielec. films and materials)

IT 992-94-9, Methylsilane
RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(silane plasma; method to restore hydrophobicity in dielec. films and materials)

IT 78-10-4, Tetraethoxysilane
RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(silica precursor; method to restore hydrophobicity in dielec. films and materials)

IT 96-22-0, 3-Pentanone
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(solvent for surface modifier; method to restore hydrophobicity in dielec. films and materials)

IT 112-35-6, Triethyleneglycol monomethyl ether
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(solvent in silica precursor; method to restore hydrophobicity in dielec. films and materials)

IT 110-43-0, 2-Heptanone
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(surface modifier solvent; method to restore hydrophobicity in dielec. films and materials)

IT 4253-34-3, Methyltriacetoxysilane

RL: MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent); USES (Uses)
(surface modifier; method to restore hydrophobicity in dielec. films and materials)

IT 75-77-4, Trimethylchlorosilane, processes 75-78-5, Dimethyldichlorosilane 78-62-6, Dimethyldiethoxysilane 107-46-0, Hexamethyldisiloxane 597-52-4, Triethylsilanol 791-31-1, Triphenylsilanol 947-42-2, Diphenylsilanediol 993-07-7, Trimethylsilane 998-30-1, Triethoxysilane 999-97-3, Hexamethyldisilazane 1066-40-6, Trimethylsilanol 1111-74-6, Dimethylsilane 1112-39-6, Dimethyldimethoxysilane 1185-55-3, Methyltrimethoxysilane 1825-61-2, Trimethylmethoxysilane 1825-62-3, Trimethylethoxysilane 2031-67-6, Methyltriethoxysilane 2182-66-3, Diacetoxydimethylsilane 2345-38-2 2487-90-3, Trimethoxysilane 2754-27-0, Acetoxytrimethylsilane 5683-31-8D, 2-Propynoic acid, 3-(trimethylsilyl)-, ester derivs. 13257-81-3 13435-12-6, n-(Trimethylsilyl)acetamide 18042-54-1, Phenyltriacetoxysilane 18156-74-6, n-(Trimethylsilyl)imidazole 18173-64-3, tert-Butyldimethylsilanol 33581-77-0 57915-58-9, Nonamethyltrisilazane
RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(surface modifier; method to restore hydrophobicity in dielec. films and materials)

L27 ANSWER 6 OF 38 CAPLUS COPYRIGHT 2002 ACS
AN 2001:650652 CAPLUS
DN 135:219187
TI TEM sample preparation technique for semiconductors using photochemical **etching**
AU Tanaka, Shigeyasu
CS Graduate School of Engineering, Nagoya University, Furo-cho, Chigusa-ku, Nagoya, 464-8603, Japan
SO Denshi Kenbikyo (2001), 36(2), 135-137
CODEN: DKENDV; ISSN: 0417-0326
PB Nippon Denshi Kenbikyo Gakkai
DT Journal
LA Japanese
CC 76-2 (Electric Phenomena)
AB TEM samples of GaAs and a heterostructure of Ga0.42In0.58As0.9P0.1/InP were prepd. by lase photochem. **etching** by studying **etching** rates.
ST TEM sample prepn **semiconductor** photochem **etching**
IT **Etching** kinetics
Sample preparation
Semiconductor materials
Transmission electron microscopy
(TEM sample prepn. technique for semiconductors using photochem. **etching**)
IT **Etching**
(photochem.; TEM sample prepn. technique for semiconductors using photochem. **etching**)
IT **64-17-5**, Ethanol, uses **7664-93-9**, Sulfuric acid, uses 7722-84-1, Hydrogen peroxide, uses 7726-95-6, Bromine, uses
RL: NUU (Other use, unclassified); USES (Uses)
(TEM sample prepn. technique for semiconductors using photochem. **etching**)
IT 1303-00-0, Gallium arsenide, processes 22398-80-7, Indium phosphide, processes 109117-66-0, Gallium indium arsenide phosphide (Ga0.42In0.58As0.9P0.1)
RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(TEM sample prepn. technique for semiconductors using photochem.

etching)

L27 ANSWER 7 OF 38 CAPLUS COPYRIGHT 2002 ACS
AN 2001:221959 CAPLUS
DN 134:230725
TI Method for fabricating capacitor of **semiconductor** device
IN Lee, Kee-Jeung
PA Hyundai Electronics Industries Co., Ltd., S. Korea
SO U.S., 9 pp.
CODEN: USXXAM
DT Patent
LA English
IC ICM H01L021-20
NCL 438398000
CC 76-3 (Electric Phenomena)
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI US 6207528	B1	20010327	US 1999-475678	19991230
PRAI KR 1998-63681	A	19981231		

AB The invention relates to a method for fabricating a capacitor of a **semiconductor** device with greater capacitance by adding an Al contg. compd. in the process of depositing an amorphous Ta2O5 layer in a LPCVD chamber, differently from the conventional method, thereby obtaining Ta2O5--Al2O3 for forming a dielec. layer with higher structural stability and dielec. const. than the Ta2O5 layer.

ST **semiconductor** device fabrication capacitor

IT Vapor deposition process
(chem., low-pressure; method for fabricating capacitor of **semiconductor** device)

IT Capacitor electrodes
Capacitors
Controlled atmospheres
Dielectric films
Nitriding
Rapid thermal annealing
Semiconductor device fabrication
Sputtering
(method for fabricating capacitor of **semiconductor** device)

IT 7782-44-7, Oxygen, processes 10024-97-2, Nitrous oxide, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(annealing ambient; method for fabricating capacitor of **semiconductor** device)

IT 7439-88-5, Iridium, uses 7440-06-4, Platinum, uses 7440-18-8, Ruthenium, uses 7440-33-7, Tungsten, uses 12030-49-8, Iridium oxide (IrO2) 12033-62-4, Tantalum nitride (TaN) 12036-10-1, Ruthenium oxide (RuO2) 12058-38-7, Tungsten nitride (WN) 12627-41-7, Tungsten silicide 25583-20-4, Titanium nitride (TiN)
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(device electrode material; method for fabricating capacitor of **semiconductor** device)

IT 1336-21-6, Ammonium hydroxide 7664-39-3, Hydrogen fluoride, processes **7664-93-9**, Sulfuric acid, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(**etchant**; method for fabricating capacitor of **semiconductor** device)

IT 1314-61-0, Tantalum oxide (Ta2O5) 1344-28-1, Alumina, uses
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(method for fabricating capacitor of **semiconductor** device)

IT 7664-41-7, Ammonia, processes 7727-37-9, Nitrogen, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(nitriding agent; method for fabricating capacitor of **semiconductor** device)
IT 7440-21-3, Silicon, uses
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(polycryst.; method for fabricating capacitor of **semiconductor** device)
IT **64-17-5**, Ethanol, processes **35296-72-1**, Butanol
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(vapor deposition precursor solvent; method for fabricating capacitor of **semiconductor** device)
IT 555-75-9, Aluminum ethoxide 6074-84-6, Tantalum ethoxide 21645-51-2, Aluminum hydroxide, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(vapor deposition precursor; method for fabricating capacitor of **semiconductor** device)
RE.CNT 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
(1) Ahn; US 5134086 1992
(2) Banerjee; IEEE Transactions on Electron Devices 2000, V47, P584 CAPLUS
(3) Fazan; IEDM Technical Digest 1992, P263
(4) Ha; IEEE Transactions on Electron Devices 2000, V47, P1499 CAPLUS
(5) Kamiyama; US 5486488 1996
(6) Kamiyama; IEDM Technical Digest 1993, P49
(7) Lee; US 5741734 1998
(8) Lim; International Conference on VLSI and CAD 1999, P506
(9) Matsudaira; US 4670355 1987 CAPLUS
(10) Muenz; US 3949275 1976 CAPLUS
(11) Tang; IEEE Circuits and Devices Magazine 1997, V13, P27
(12) Won; US 6136641 2000 CAPLUS

L27 ANSWER 8 OF 38 CAPLUS COPYRIGHT 2002 ACS
AN 2001:145246 CAPLUS
DN 134:171970
TI Low temperature rinse of **etching** agents in device fabrication
IN Gilton, Terry L.
PA Micron Technology, Inc., USA
SO U.S., 10 pp.
CODEN: USXXAM
DT Patent
LA English
IC ICM H01L021-3063
NCL 438745000
CC 76-3 (Electric Phenomena)
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 6194326	B1	20010227	US 2000-544721	20000406

AB A wafer cleaning process is disclosed for quenching **etch** reactions while rinsing **etch** reactants and **etch** products from the wafer. Holes are **etched** through an insulating layer by reactive ion **etch**, for example. The holes might comprise contact openings over a **semiconductor** substrate, or vias through insulating layers between metal lines. An org. or polymer residue left in the holes is cleaned by a wet process. The cleaning process continues to attack sidewalls of the holes, undesirably widening them. The wafer is therefore rinsed with a rinse agent <0.degree., thermally quenching further **etching** of the sidewalls and affording greater control over the hole dimensions. At the same time, the

rinse agent allows relatively rapid diffusion of **etchants** and **etch** products from narrow and deep openings. An exemplary rinse agent for such low temp. rinsing is dil. ethylene glycol.

ST rinsing **etchant** device fabrication

IT **Etching**
(**etchants**; low temp. rinse of **etching** agents in device fabrication)

IT Sputtering
(**etching**, reactive, agents; low temp. rinse of **etching** agents in device fabrication)

IT Alcohols, processes
Amines, processes
Glycols, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(in low temp. rinse of **etching** agents in device fabrication)

IT Contact holes
Semiconductor device fabrication
Washing
(low temp. rinse of **etching** agents in device fabrication)

IT **Etching**
(sputter, reactive, agents; low temp. rinse of **etching** agents in device fabrication)

IT Interconnections (electric)
(vias; low temp. rinse of **etching** agents in device fabrication)

IT **67-63-0**, Isopropanol, uses
RL: NUU (Other use, unclassified); USES (Uses)
(drying agent; low temp. rinse of **etching** agents in device fabrication)

IT **7664-38-2**, Phosphoric acid, uses
RL: NUU (Other use, unclassified); USES (Uses)
(**etchant**; low temp. rinse of **etching** agents in device fabrication)

IT 57-55-6, Propylene glycol, processes 107-21-1, Ethylene glycol, processes 7732-18-5, Water, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(in low temp. rinse of **etching** agents in device fabrication)

IT 7664-41-7, Ammonia, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(liq.; in low temp. rinse of **etching** agents in device fabrication)

RE.CNT 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

(1) Aoyama; US 5630904 1997 CAPLUS
(2) Li; US 6012469 2000 CAPLUS
(3) Mautz; US 5476816 1995 CAPLUS
(4) Ng; US 5946589 1999 CAPLUS
(5) Sugihara; US 5705089 1998 CAPLUS

L27 ANSWER 9 OF 38 CAPLUS COPYRIGHT 2002 ACS

AN 2001:91552 CAPLUS

DN 134:134107

TI Photovoltaic device

IN Matsuyama, Jinsho; Matsuda, Koichi

PA Canon Kabushiki Kaisha, Japan

SO U.S., 102 pp.
CODEN: USXXAM

DT Patent

LA English

IC ICM H01L031-00

NCL 136256000
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 76
FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 6184456	B1	20010206	US 1997-985312	19971204
	JP 10173216	A2	19980626	JP 1996-342725	19961206
	JP 10173211	A2	19980626	JP 1996-342726	19961206
	JP 10200146	A2	19980731	JP 1997-13364	19970108
	JP 10200147	A2	19980731	JP 1997-13365	19970108
PRAI	JP 1996-342725	A	19961206		
	JP 1996-342726	A	19961206		
	JP 1997-13364	A	19970108		
	JP 1997-13365	A	19970108		

AB A photovoltaic device of the present invention has a non-single-crystal **semiconductor**. A layer underlying the non-single-crystal **semiconductor** has a polycryst. structure. Individual grains of the polycrystal exposed in the surface of the underlying layer have smooth surfaces. The surface of the underlying layer has a step along the grain boundaries of the polycrystal, or a protrusion or recess at the grain boundaries. Alternatively, polycrystal grains having rough surfaces and polycrystal grains having smooth surfaces commonly exist in the surface of the polycryst. layer. The polycryst. layer may be a substrate of the photovoltaic device. The present invention, by virtue of the use of such a polycryst. layer, provides a highly reliable and efficient thin-film photovoltaic device which enhances light absorption by the **semiconductor** layer and which can be produced at a high yield even at a practically adaptable low cost, while eliminating deficiencies of known arts in regard to workability, yield and durability.

ST solar photovoltaic device

IT **Etching**
(acid; photovoltaic device with polycryst. **semiconductor**)

IT Photodiodes
Semiconductor materials
Solar cells
Sputtering
Ultrasonic cleaning
(photovoltaic device with polycryst. **semiconductor**)

IT Microwave
(plasma CVD; photovoltaic device with polycryst. **semiconductor**)

IT Vapor deposition process
(plasma, microwave; photovoltaic device with polycryst. **semiconductor**)

IT Vapor deposition process
(plasma, radio-frequency; photovoltaic device with polycryst. **semiconductor**)

IT Magnetron sputtering
(radio-frequency; photovoltaic device with polycryst. **semiconductor**)

IT 7429-90-5, Aluminum, uses 7439-95-4, Magnesium, uses 7440-22-4, Silver, uses 7440-50-8, Copper, uses 7440-57-5, Gold, uses
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(back-side reflection layer; photovoltaic device with polycryst. **semiconductor**)

IT 64-19-7, Acetic acid, uses 7647-01-0, Hydrochloric acid, uses **7664-38-2**, Phosphoric acid, uses 7664-39-3, Hydrofluoric acid, uses 7697-37-2, Nitric acid, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(**etchant** contg.; photovoltaic device with polycryst. **semiconductor**)

IT 11148-21-3
RL: DEV (Device component use); USES (Uses)
(photovoltaic device with polycryst. **semiconductor**)
IT 11109-50-5, SUS 304 12597-68-1, Stainless steel, uses 321912-48-5, JIS SUS 430-2D
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(photovoltaic device with polycryst. **semiconductor**)
IT 1314-13-2P, Zinc oxide, uses 7440-21-3P, Silicon, uses
RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(photovoltaic device with polycryst. **semiconductor**)
IT 321912-46-3, JIS SUS 430-2B
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(photovoltaic device with polycryst. **semiconductor**)
IT 11099-22-2
RL: FMU (Formation, unclassified); FORM (Formation, nonpreparative)
(photovoltaic device with polycryst. **semiconductor**)
IT 7637-07-2, Boron trifluoride, uses
RL: MOA (Modifier or additive use); USES (Uses)
(photovoltaic device with polycryst. **semiconductor**)
IT 7803-51-2, Phosphine
RL: MOA (Modifier or additive use); RCT (Reactant); RACT (Reactant or reagent); USES (Uses)
(photovoltaic device with polycryst. **semiconductor**)
IT 1590-87-0, Disilane 7803-62-5, Silane, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(photovoltaic device with polycryst. **semiconductor**)
IT **67-63-0**, Isopropanol, uses 67-64-1, Acetone, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(photovoltaic device with polycryst. **semiconductor**)
IT 11099-19-7
RL: DEV (Device component use); USES (Uses)
(reflection layer; photovoltaic device with polycryst. **semiconductor**)
IT 128511-05-7, SUS430BA
RL: TEM (Technical or engineered material use); USES (Uses)
(substrate; photovoltaic device with polycryst. **semiconductor**)
IT 1312-43-2, Indium oxide in2o3
RL: DEV (Device component use); USES (Uses)
(transparent electrode; photovoltaic device with polycryst. **semiconductor**)
IT 50926-11-9, Ito
RL: DEV (Device component use); USES (Uses)
(transparent electrodes; photovoltaic device with polycryst. **semiconductor**)
RE.CNT 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
(1) Anon; JP 6084888 1985
(2) Arao; US 5244509 1993 CAPLUS
(3) Borden; Conference Record, 16th IEEE Photovoltaic Specialists Conf 1982
(4) Deckman; 16th IEEE Photov Spec Conf 1982, P1425 CAPLUS
(5) Gonzalez; US 4431858 1984 CAPLUS
(6) Hamakawa; Appl Phys Lett 1983, V43(7), P644 CAPLUS
(7) Harata; US 5498904 1996 CAPLUS
(8) Iwasaki; US 5668050 1997 CAPLUS
(9) Nakagawa; US 5486238 1996 CAPLUS
(10) Saito; US 5284525 1994 CAPLUS
(11) Tiedje; 16th IEEE Photov Spec Conf 1982, P1423 CAPLUS

L27 ANSWER 10 OF 38 CAPLUS COPYRIGHT 2002 ACS
AN 2001:64307 CAPLUS
DN 134:124734
TI Compositions and processes for spin **etch** planarization in **semiconductor** device fabrication
IN Levert, Joseph; Towery, Daniel L.
PA Alliedsignal Inc., USA
SO PCT Int. Appl., 38 pp.
CODEN: PIXXD2
DT Patent
LA English
IC ICM H01L021-321
ICS C23F003-06
CC 76-3 (Electric Phenomena)
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI WO 2001006555	A1	20010125	WO 2000-US18723	20000710
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
US 2001054706	A1	20011227	US 1999-356487	19990719
EP 1198827	A1	20020424	EP 2000-947151	20000710
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL				
PRAI US 1999-356487	A	19990719		
WO 2000-US18723	W	20000710		

AB The present invention describes methods and chem. compns. for the spin **etch** planarization of surfaces, particularly Cu and Ta. An **etching** soln. is brought into contact with the upper face of a spinning wafer through a nozzle, preferably an oscillating nozzle. The **etching** soln. has a compn. that oxidizes the spinning surface, forming a passivation layer thereon. The **etching** soln. further contains reactants for removing the passivation layer exposing the underlying surface to further reaction, leading to the desired **etching** of the surface. The characteristics of the **etching** soln. are adjusted such that reactant diffusion to lower regions of the surface limits the rate of **etching**. Faster reaction occurs at higher regions of the surface lying in more rapidly moving **etching** soln. resulting in the desired planarization.

ST spin **etching** polishing **semiconductor** device fabrication; chem mech polishing device fabrication; oxidn **etching** device fabrication

IT Alcohols, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(aliph.; in compns. and processes for spin **etch** planarization in **semiconductor** device fabrication)

IT Surfactants
(anionic; in compns. and processes for spin **etch** planarization in **semiconductor** device fabrication)

IT Surfactants
(cationic; in compns. and processes for spin **etch** planarization in **semiconductor** device fabrication)

IT Polishing
(chem.-mech.; compns. and processes for spin **etch** planarization in **semiconductor** device fabrication)

IT **Etching**

Integrated circuits
Semiconductor device fabrication
(compns. and processes for spin **etch** planarization in **semiconductor** device fabrication)

IT Hydrocarbons, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(fluoro; in compns. and processes for spin **etch** planarization in **semiconductor** device fabrication)

IT Nozzles
(for spin **etch** planarization in **semiconductor** device fabrication)

IT Oxidizing agents
Wetting agents
(in compns. and processes for spin **etch** planarization in **semiconductor** device fabrication)

IT Amines, processes
Carboxylic acids, processes
Gelatins, processes
Phenols, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(in compns. and processes for spin **etch** planarization in **semiconductor** device fabrication)

IT Passivation
(in spin **etch** planarization in **semiconductor** device fabrication)

IT Surfactants
(nonionic; in compns. and processes for spin **etch** planarization in **semiconductor** device fabrication)

IT Surfactants
(org.; in compns. and processes for spin **etch** planarization in **semiconductor** device fabrication)

IT **Etching**
(photochem.; for planarization in **semiconductor** device fabrication)

IT Oxidation
(surface; in spin **etch** planarization in **semiconductor** device fabrication)

IT 7440-25-7, Tantalum, processes 7440-50-8, Copper, processes
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(compns. and processes for spin **etch** planarization of)

IT 57-55-6, Propyleneglycol, processes 60-00-4, EDTA, processes 62-76-0, Sodium oxalate **64-17-5**, Ethanol, processes 64-19-7, Acetic acid, processes 67-56-1, Methanol, processes 68-04-2, Trisodium citrate **71-23-8**, n-Propanol, processes 75-89-8 77-92-9, Citric acid, processes 87-69-4, Tartaric acid, processes 88-27-7, 2,6-Di-tert-butyl-4-[(dimethylamino)methyl]phenol 89-65-6, Erythorbic acid 95-14-7, 1H-Benzotriazole 102-71-6, Triethanolamine, processes 104-75-6, 2-Ethylhexylamine 107-21-1, 1,2-Ethanediol, processes 128-37-0, Agidol, processes 139-33-3 144-62-7, Oxalic acid, processes 288-36-8, 1,2,3-Triazole 288-88-0, 1H-1,2,4-Triazole 288-94-8, 1H-Tetrazole 1303-96-4, Borax 1310-73-2, Sodium hydroxide, processes 1333-39-7, Phenolsulfonic acid 1336-21-6, Ammonium hydroxide 6915-15-7, Malic acid 7439-98-7D, Molybdenum, salts, processes 7440-25-7D, Tantalum, salts, processes 7440-50-8D, Copper, salts, processes 7447-40-7, Potassium chloride, processes 7631-95-0, Sodium molybdate 7631-99-4, Sodium nitrate, processes 7647-01-0, Hydrogen chloride, processes **7664-38-2**, Phosphoric acid, processes 7664-39-3, Hydrogen fluoride, processes **7664-93-9**, Sulfuric acid, processes 7697-37-2, Nitric acid, processes 7722-84-1, Hydrogen peroxide, processes 7733-02-0, Zinc sulfate 7758-89-6, Cuprous

chloride 7758-98-7, Cupric sulfate, processes 7775-09-9, Sodium chlorate (NaClO3) 8061-51-6, Sodium lignosulfonate 9002-89-5, Polyvinyl alcohol 9002-92-0, Poly(oxyethylene)lauryl ether 9004-32-4, Carboxymethylcellulose 12125-01-8, Ammonium fluoride 14066-19-4, Monohydrogen phosphate, processes 14265-44-2, Phosphate, processes 16887-00-6, Chloride, processes 17084-08-1, Hexafluorosilicate 26053-72-5, Diphenylsulfamic acid 27846-09-9, Iron monochloride 89800-24-8, Laprol 602
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(in compns. and processes for spin **etch** planarization in **semiconductor** device fabrication)

RE.CNT 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

(1) Anon; PATENT ABSTRACTS OF JAPAN 1997, V1997(01)
(2) Contolini; US 5486234 A 1996 CAPLUS
(3) Gelchinski; US 4497692 A 1985 CAPLUS
(4) Ibm; EP 0699782 A 1996 CAPLUS
(5) Kern; RCA REVIEW 1978, V39(2), P278 CAPLUS
(6) Samsung Electronics; DE 19928570 A 1999 CAPLUS
(7) Sasaki; US 5770095 A 1998 CAPLUS
(8) Sez Semiconductor-Equipment; EP 0905754 A 1999 CAPLUS
(9) Ube Ind Ltd; JP 08236615 A 1996 CAPLUS
(10) Unvala; JOURNAL OF THE ELECTROCHEMICAL SOCIETY 1972, V119(3), P318 CAPLUS

L27 ANSWER 11 OF 38 CAPLUS COPYRIGHT 2002 ACS

AN 2001:43400 CAPLUS

DN 134:94377

TI Process for treating a **semiconductor** substrate

IN Arndt, Russell H.; Gale, Glenn Walton; Kern, Frederick William, Jr.; Madden, Karen P.; Okorn-schmidt, Harald F.; Ouimet, George Francis, Jr.; Salgado, Dario; Wuthrich, Ryan Wayne

PA International Business Machines Corporation, USA

SO U.S., 3 pp.
CODEN: USXXAM

DT Patent

LA English

IC ICM H01L021-302

NCL 134001300

CC 76-3 (Electric Phenomena)
Section cross-reference(s): 66

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 6173720	B1	20010116	US 1998-203927	19981202
	KR 2000047644	A	20000725	KR 1999-50530	19991115
	US 6354309	B1	20020312	US 2000-671730	20000929
PRAI	US 1998-203927	A	19981202		

date

AB **Semiconductor** substrates are contacted with a deionized water soln. contg. an acidic material. The method involves treating a silicon substrate which includes treating the substrate with HF acid, displacing with a los pH soln., displacing the low pH soln. with an org. solvent, and drying with an inert gas.

ST acid soln org solvent **semiconductor** substrate treatment

IT Cleaning
Etching
Semiconductor device fabrication
Semiconductor materials
(acidic soln. and org. solvent in treatment of a **semiconductor** substrate)

IT **67-63-0**, Isopropyl alcohol, properties **463-79-6**, Carbonic acid, properties 7664-39-3, Hydrogen fluoride, properties
RL: PRP (Properties); RCT (Reactant); TEM (Technical or engineered

material use); RACT (Reactant or reagent); USES (Uses)
(acidic soln. and org. solvent in treatment of a **semiconductor** substrate)

RE.CNT 23 THERE ARE 23 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

(1) Akira; Patent Abstracts of Japan 1993
(2) Anon; JP 06192861 1994 CAPLUS
(3) Anon; JP 06291099 1994 CAPLUS
(4) Anon; JP 07283182 1995 CAPLUS
(5) Anon; JP 07283191 1995 CAPLUS
(6) Anon; JP 09027469 1997 CAPLUS
(7) Anon; EP 782177 A2 1997 CAPLUS
(8) Anon; DE 19723918 1998 CAPLUS
(9) Anon; JP 11080787 1999 CAPLUS
(10) Anon; JP 2000056478 2000 CAPLUS
(11) Anttila; US 5382296 1995 CAPLUS
(12) Beck; US 3813311 1974 CAPLUS
(13) Fleming; US 5294570 1994
(14) Izumi; US 5571375 1996 CAPLUS
(15) Kinya; Patent Abstracts of Japan 1997
(16) Lee; Bull, Korean Chem Soc 1997, V18(7)
(17) Li; US 5681397 1997 CAPLUS
(18) Li; J Appl Phys 1995, V77(3), P1323 CAPLUS
(19) Mashimo; US 5261966 1993 CAPLUS
(20) Michiko; Patent Abstracts of Japan 1992
(21) Olesen; US 5656097 1997 CAPLUS
(22) Tachimori; US 5373804 1994 CAPLUS
(23) Ueno; US 5882433 1999

L27 ANSWER 12 OF 38 CAPLUS COPYRIGHT 2002 ACS

X date

AN 2001:12778 CAPLUS

DN 134:79754

TI Acid blend for removing **etch** residue on **semiconductor** substrates

IN Torek, Kevin J.; Yates, Donald L.

PA Micron Technology, Inc., USA

SO PCT Int. Appl., 49 pp.
CODEN: PIXXD2

DT Patent

LA English

IC ICM H01L021-3213
ICS H01L021-306; G03F007-42

CC 76-3 (Electric Phenomena)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2001001474	A1	20010104	WO 2000-US40096	20000605
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
	RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
	EP 1196949	A1	20020417	EP 2000-945418	20000605
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
PRAI	US 1999-342243	A	19990629		
	WO 2000-US40096	W	20000605		

AB A method is presented for removing organometallic and organosilicate residues remaining after a dry **etch** process from

semiconductor substrates. The substrate is exposed to a conditioning soln. of a F source, a nonaq. solvent, a complementary acid, and a surface passivation agent. The F source is typically HF. The nonaq. solvent is typically a polyhydric alc. such as propylene glycol. The complementary acid is typically either H3PO4 or HCl. The surface passivation agent is typically a carboxylic acid such as citric acid. Exposing the substrate to the conditioning soln. removes the remaining dry **etch** residues while minimizing removal of material from desired substrate features.

ST **etching** residue removal acid blend **semiconductor** device fabrication

IT Passivation
Semiconductor device fabrication
(acid blend for removing **etch** residue on **semiconductor** substrates)

IT **Etching**
(dry; acid blend for removing **etch** residue on **semiconductor** substrates)

IT Chelating agents
(**etching** passivation agent; acid blend for removing **etch** residue on **semiconductor** substrates)

IT Alcohols, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(polyhydric; acid blend for removing **etch** residue on **semiconductor** substrates)

IT 515-98-0, Ammonium lactate **10043-35-3**, Boric acid, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(anti-**etch** agent; acid blend for removing **etch** residue on **semiconductor** substrates)

IT 124-38-9, Carbon dioxide, processes 7727-37-9, Nitrogen, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(**etch** rinsing process gas; acid blend for removing **etch** residue on **semiconductor** substrates)

IT 7647-01-0, Hydrogen chloride, processes **7664-38-2**, Phosphoric acid, processes 7664-39-3, Hydrogen fluoride, processes 12125-01-8, Ammonium fluoride
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(**etchant**; acid blend for removing **etch** residue on **semiconductor** substrates)

IT 60-00-4, EDTA, processes 64-19-7, Acetic acid, processes 77-92-9, Citric acid, processes 62624-30-0, Ascorbic acid
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(**etching** passivation agent; acid blend for removing **etch** residue on **semiconductor** substrates)

IT 57-55-6, Propylene glycol, processes **67-63-0**, Isopropyl alcohol, processes 67-68-5, Dimethylsulfoxide, processes 107-21-1, Ethylene glycol, processes 108-32-7, Propylene carbonate 109-99-9, Tetrahydrofuran, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(**etching** solvent; acid blend for removing **etch** residue on **semiconductor** substrates)

IT **463-79-6**, Carbonic acid, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(rinsing agent; acid blend for removing **etch** residue on **semiconductor** substrates)

RE.CNT 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE
(1) Grieger; US 5855811 A 1999 CAPLUS
(2) Mitsubishi Gas Chemical; EP 0827188 A 1998 CAPLUS
(3) Wakp Pure Chemicals; EP 0812011 A 1997 CAPLUS
(4) Ward; US 5698503 A 1997 CAPLUS

L27 ANSWER 13 OF 38 CAPLUS COPYRIGHT 2002 ACS
AN 2000:725881 CAPLUS
DN 133:289930
TI Selective **etching** of doped from undoped polysilicon in **semiconductor** device fabrication
IN Mercaldi, Garry A.; Yates, Donald L.
PA Micron Technology, Inc., USA
SO PCT Int. Appl., 31 pp.
CODEN: PIXXD2
DT Patent
LA English
IC ICM H01L021-306
ICS H01L021-3213; C23F001-00
CC 76-3 (Electric Phenomena)
Section cross-reference(s): 21
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI WO 2000060651	A1	20001012	WO 2000-US8939	20000405
W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
US 2001004553	A1	20010621	US 1999-285773	19990405
EP 1177575	A1	20020206	EP 2000-921671	20000405
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
US 6316370	B1	20011113	US 2000-644699	20000824
PRAI US 1999-285773	A	19990405		
WO 2000-US8939	W	20000405		

AB The present invention provides an **etching** compn. which includes a polyhydric alc. in combination with two inorg. acids. Preferably the **etching** compn. of the present invention is a mixt. of a glycol, nitric acid and hydrofluoric acid, with propylene glycol being preferred. The **etching** compn. of the present invention achieves a selectivity of greater than 70:1, doped material to undoped material. The present invention provides an **etching** formulation which has increased selectivity of doped polysilicon to undoped polysilicon and provides an efficient integrated circuit fabrication process without requiring time consuming and costly processing modifications to the **etching** app. or prodn. app.
ST hydric alc inorg acid selective **etching** doping silicon; propylene glycol nitric hydrofluoric acid **etching** **semiconductor** device fabrication
IT Densification
(BSPG; and selective **etching** in **semiconductor** device fabrication)
IT Annealing
(and selective **etching** of doped from undoped polysilicon in **semiconductor** device fabrication)
IT Glycols, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical

process); PROC (Process); USES (Uses)
(**etchants**; in selective **etching** of doped from undoped polysilicon in **semiconductor** device fabrication)

IT Borophosphosilicate glasses
RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(in selective **etching** of doped from undoped polysilicon in **semiconductor** device fabrication)

IT Acids, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(inorg., **etchants**; in selective **etching** of doped from undoped polysilicon in **semiconductor** device fabrication)

IT Alcohols, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(polyhydric, **etchants**; in selective **etching** of doped from undoped polysilicon in **semiconductor** device fabrication)

IT **Semiconductor** device fabrication
(selective **etching** of doped from undoped polysilicon in)

IT Doping
(selective **etching** of doped from undoped polysilicon in **semiconductor** device fabrication)

IT **Etching**
(selective; of doped from undoped polysilicon in **semiconductor** device fabrication)

IT 7440-56-4, Germanium, processes
RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(doped; selective **etching** of)

IT 50-70-4, Sorbitol, processes 57-55-6, Propylene glycol, processes **64-17-5**, Ethanol, processes **67-63-0**, Isopropanol, processes **71-23-8**, Propanol, processes **71-36-3**, n-Butanol, processes **78-83-1**, Iso-butanol, processes 106-69-4, 1,2,6-Hexanetriol 107-21-1, Ethylene glycol, processes 107-41-5, Hexylene glycol 107-88-0, Butylene glycol 111-29-5, 1,5-Pentanediol **463-79-6**, Carbonic acid, processes **7601-90-3**, Perchloric acid, processes 7664-39-3, Hydrofluoric acid, processes **7664-93-9**, Sulfuric acid, processes 7697-37-2, Nitric acid, processes **7782-99-2**, Sulfurous acid, processes **10043-35-3**, Boric acid, processes 25265-71-8, Dipropylene glycol 54289-82-6
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(**etchants**; in selective **etching** of doped from undoped polysilicon in **semiconductor** device fabrication)

IT 7631-86-9, Silica, processes
RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(in selective **etching** of doped from undoped polysilicon in **semiconductor** device fabrication)

IT 7440-21-3, Silicon, processes
RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(polycryst.; selective **etching** of doped from undoped polysilicon in **semiconductor** device fabrication)

RE.CNT 9 THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

(1) Anon; PATENT ABSTRACTS OF JAPAN 1984, V008(058), PP-261
(2) Anon; PATENT ABSTRACTS OF JAPAN 1993, V017(681), PP-1660
(3) Baeslack, W; MATERIALS CHARACTERIZATION 1993, V31(4), P197 CAPLUS
(4) Holoubek Jiri Ing; CS 272371 B 1991 CAPLUS

(5) Kogyo Gijutsuin; JP 58207009 A 1983 CAPLUS
(6) Sez Semiconduct Equip Zubehoer; EP 0905754 A 1999 CAPLUS
(7) Sumitomo Metal Ind Ltd; JP 05231996 A 1993
(8) Takeuchi Hiroshi; US 5017513 A 1991 CAPLUS
(9) Woo, S; US 5518966 A 1996 CAPLUS

L27 ANSWER 14 OF 38 CAPLUS COPYRIGHT 2002 ACS
AN 2000:440534 CAPLUS
DN 133:67139
TI Anisotropic **etching** of semiconductors and **etchant** solutions provided in **etching** thereof
IN Terashima, Kentaro
PA Sharp Corp., Japan
SO Jpn. Kokai Tokkyo Koho, 6 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM H01L021-308
ICS C09K013-04; C09K013-06
CC 76-3 (Electric Phenomena)
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 2000183047	A2	20000630	JP 1998-358169	19981216

AB The **etchant** solns. for anisotropic **etching** of zinc-blende crystal structure **semiconductor** wafers at an **etching** angle 45.degree. normal-mesa anisotropy contain .gtoreq.5 wt.% HCl, .gtoreq.5 wt.% HBr, and an acid solvent. The **etching** as a chem. process gives an improved productivity and economy in manufg. in comparison to prior-art cutting or slicing as mech./phys. process.
ST hydrogen chloride bromide **etchant** anisotropic **etching** **semiconductor** wafer
IT Sphalerite-type crystals
(anisotropic **etching** of; anisotropic **etching** of semiconductors and **etchant** solns. provided in **etching** thereof)
IT **Etching**
(anisotropic, **etchant** soln. for; anisotropic **etching** of semiconductors and **etchant** solns. provided in **etching** thereof)
IT **Semiconductor** materials
(**etching** of; anisotropic **etching** of semiconductors and **etchant** solns. provided in **etching** thereof)
IT **64-17-5**, Ethanol, uses 64-19-7, Acetic acid, uses **7664-38-2**, Phosphoric acid, uses **62309-51-7**, Propanol
RL: MOA (Modifier or additive use); USES (Uses)
(anisotropic **etching** of semiconductors and **etchant** solns. provided in **etching** thereof)
IT 7647-01-0, Hydrogen chloride, properties 10035-10-6, Hydrogen bromide, properties
RL: NUU (Other use, unclassified); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(**etchant**; anisotropic **etching** of semiconductors and **etchant** solns. provided in **etching** thereof)

L27 ANSWER 15 OF 38 CAPLUS COPYRIGHT 2002 ACS
AN 2000:344088 CAPLUS
DN 132:328632
TI Method of fabricating embedded gate electrodes
IN Chen, Chih-rong; Yeh, Chi-chin
PA United Microelectronics Corp., Taiwan
SO U.S., 12 pp.
CODEN: USXXAM

DT Patent
LA English
IC ICM H01L021-336
NCL 438259000
CC 76-3 (Electric Phenomena)
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 6066532	A	20000523	US 1999-419434	19991018

AB A method of fabricating an embedded gate electrode is disclosed. The method includes the steps of: Providing a **semiconductor** substrate; forming a patterned **etch** resistant mask layer over the **semiconductor** substrate, wherein the patterned **etch** resistant mask layer has a 1st opening for a desired location of a trench; anisotropically **etching** through the patterned **etch** resistant mask layer and into the **semiconductor** substrate, hence forming the trench at the desired location; removing the patterned **etch** resistant mask layer; depositing a 1st insulating layer over the **semiconductor** substrate and filling up the trench; patterning a planarized 1st insulating layer to define a 2nd opening for the embedded gate electrode; forming a 2nd insulating layer at the bottom of the 2nd opening; depositing a conductive layer over the 2nd insulating layer and filling up the 2nd opening, hence forming the embedded gate electrode; ion implanting the **semiconductor** substrate to form source/drain regions; forming a spacer on the sidewall of the embedded gate electrode; depositing a refractory metal layer over the entire exposing surface of a resulting structure; and annealing the refractory metal layer to form a silicide layer on the embedded gate electrode and elsewhere on the source/drain regions.

ST refractory metal silicidation gate electrode

IT **Etching**
(anisotropic; in method of fabricating embedded gate electrodes)

IT Vapor deposition process
(chem.; in method of fabricating embedded gate electrodes)

IT Films
Films
(elec. conductive; in method of fabricating embedded gate electrodes)

IT Electric conductors
Electric conductors
(films; in method of fabricating embedded gate electrodes)

IT Annealing
Cleaning
Dielectric films
Electron beam evaporation
Etching masks
Ion implantation
Magnetron sputtering
Photolithography
Rapid thermal annealing
Siliconizing
(in method of fabricating embedded gate electrodes)

IT Refractory metal silicides
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); SPN (Synthetic preparation); PREP (Preparation); PROC (Process); USES (Uses)
(in method of fabricating embedded gate electrodes)

IT Refractory metals
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(in method of fabricating embedded gate electrodes)

IT **Semiconductor** device fabrication
(method of fabricating embedded gate electrodes)

IT **Etching**

(selective; in method of fabricating embedded gate electrodes)
IT **7664-38-2**, Phosphoric acid, uses
RL: NUU (Other use, unclassified); USES (Uses)
(**etchant** for silicon nitride; in method of fabricating embedded gate electrodes)
IT 7440-21-3, Silicon, processes 7631-86-9, Silica, processes 12033-89-5, Silicon nitride, processes
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(in method of fabricating embedded gate electrodes)
IT 7440-38-2, Arsenic, uses 7723-14-0, Phosphorus, uses
RL: MOA (Modifier or additive use); USES (Uses)
(in method of fabricating embedded gate electrodes)
IT **67-63-0**, Isopropanol, uses 1310-58-3, Potassium hydroxide, uses 7664-39-3, Hydrogen fluoride, uses **7664-93-9**, Sulfuric acid, uses 7722-84-1, Hydrogen peroxide, uses
RL: NUU (Other use, unclassified); USES (Uses)
(in method of fabricating embedded gate electrodes)
IT 7440-06-4, Platinum, processes 7440-32-6, Titanium, processes 7440-38-2D, Arsenic, ions, processes 7440-48-4, Cobalt, processes 7723-14-0D, Phosphorus, ions, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(in method of fabricating embedded gate electrodes)
RE.CNT 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
(1) Cho; US 5610091 1997 CAPLUS
(2) Gardner; US 5998288 1999 CAPLUS
(3) Hsue; US 5668031 1997 CAPLUS
(4) Miwa; US 5583065 1996 CAPLUS

L27 ANSWER 16 OF 38 CAPLUS COPYRIGHT 2002 ACS
AN 2000:271922 CAPLUS
DN 132:272924
TI Improving the wet process chemical sequence in **semiconductor** wafer **etching** cleanup
IN Niccoli, John V.
PA Texas Instruments Incorporated, USA
SO U.S., 7 pp.
CODEN: USXXAM
DT Patent
LA English
IC ICM H01L021-00
NCL 438745000
CC 76-3 (Electric Phenomena)
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI US 6054393	A	20000425	US 1998-4239	19980108
PRAI US 1997-34214P	P	19970109		

AB A method for **semiconductor** wafer **etching** cleanup comprises placing an oxide layer on a Si wafer, cleaning the wafer surface with an **etching** agent cleaning soln., such as HF, and washing the wafer surface with a cleaning soln., prior to drying with iso-PrOH vapor to reduce the no. of defects caused by the formation of watermarks on the wafer surface.
ST **semiconductor** wafer **etching** cleanup; hydrofluoric acid cleaning silicon wafer; isopropanol vapor drying **etched** silicon wafer
IT Cleaning
Etching
Semiconductor materials
(improving wet process chem. sequence in **semiconductor** wafer

etching cleanup)
IT **Semiconductor** device fabrication
(improving wet process chem. sequence in silicon wafer **etching** cleanup in)
IT Washing
(in improving wet process chem. sequence in **semiconductor** wafer **etching** cleanup)
IT **67-63-0**, Isopropanol, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(drying with vapor of; in improving wet process chem. sequence in **semiconductor** wafer **etching** cleanup)
IT 7440-21-3, Silicon, processes
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(improving wet process chem. sequence in silicon wafer **etching** cleanup)
IT 7631-86-9, Silica, processes
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(in improving wet process chem. sequence in **semiconductor** wafer **etching** cleanup)
IT 1336-21-6, Ammonium hydroxide ((NH4)(OH)) 7647-01-0, Hydrogen chloride, processes 7664-39-3, Hydrogen fluoride, processes **7664-93-9**, Sulfuric acid, processes 7722-84-1, Hydrogen peroxide, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(in improving wet process chem. sequence in **semiconductor** wafer **etching** cleanup)
RE.CNT 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
(1) Chen; US 5308400 1994 CAPLUS
(2) Chien; US 5328867 1994 CAPLUS
(3) Fujii; US 5278448 1994 CAPLUS
(4) McConnell; US 4795497 1989
(5) McConnell; US 4917123 1990

L27 ANSWER 17 OF 38 CAPLUS COPYRIGHT 2002 ACS
AN 1999:789811 CAPLUS
DN 132:28450
TI Lens fiber coupler assembly and its production thereof
IN Anderson, Eric R.; Tran, Dean; Strijek, Ronald L.; Rezek, Edward A.
PA TRW Inc., USA
SO Jpn. Kokai Tokkyo Koho, 9 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM G02B006-42
ICS G02B006-00; H01L021-306; H01L021-308
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 74
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 11344649	A2	19991214	JP 1999-127707	19990507
PRAI	US 1998-74193		19980507		

AB The invention refers to a lens fiber coupler assembly and its prodn., wherein photolithog. methods and anisotropic **etching** of III - V **semiconductor** materials are use to decrease the device size, facilitate large scale prodn. and increase reliability.
ST lens fiber coupler photolithog **semiconductor** materials anisotropic **etching**

IT **Semiconductor** materials
(Group IIIA element pnictide; lens fiber coupler assembly and prodn. thereof)
IT **Etching**
(anisotropic; lens fiber coupler assembly and prodn. thereof)
IT Optical couplers
Photolithography
(lens fiber coupler assembly and prodn. thereof)
IT **64-17-5**, Ethanol, processes 67-56-1, Methanol, processes **67-63-0**, Isopropanol, processes 77-92-9, Citric acid, processes 1336-21-6, Ammonium hydroxide 7647-01-0, Hydrogen chloride, processes **7664-38-2**, Phosphoric acid, processes 7664-39-3, Hydrogen fluoride, processes **7664-93-9**, Sulfuric acid, processes 7697-37-2, Nitric acid, processes 7705-08-0, Iron chloride, processes 7722-84-1, Hydrogen peroxide, processes 7726-95-6, Bromine, processes 7758-05-6, Potassium iodate 7789-00-6, Potassium chromate 10035-10-6, Hydrogen bromide, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(anisotropic **etching** of III - V **semiconductor** materials)
IT 111-15-9, 2-Ethoxyethyl acetate 142-62-1, Butylacetic acid, uses 999-97-3, Hexamethyldisilazane 1303-00-0, Gallium arsenide, uses 1303-11-3, Indium arsenide, uses 1330-20-7, Xylene, uses 1344-28-1, Aluminum oxide, uses 7631-86-9, Silica, uses 12033-89-5, Silicon nitride, uses 12063-98-8, Gallium phosphide, uses 22398-80-7, Indium phosphide, uses
RL: DEV (Device component use); USES (Uses)
(lens fiber coupler assembly and prodn. thereof)

L27 ANSWER 18 OF 38 CAPLUS COPYRIGHT 2002 ACS
AN 1999:538084 CAPLUS
DN 131:152697
TI Device and method for wet-**etching** of **semiconductor** disks
IN Sumnitsch, Franz; Wagner, Gerald
PA SEZ Semiconductor-Equipment Zubehoer fuer die Halbleiterfertigung A.-G., Austria
SO Ger. Offen., 8 pp.
CODEN: GWXXBX
DT Patent
LA German
IC ICM H01L021-304
ICS C23F001-16
CC 76-3 (Electric Phenomena)
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DE 19805525	A1	19990819	DE 1998-19805525	19980211
	DE 19805525	C2	20020613		
	IT 1309069	B1	20020116	IT 1999-MI120	19990122
	GB 2334374	A1	19990818	GB 1999-1810	19990127
	JP 11274147	A2	19991008	JP 1999-27834	19990204
	JP 3242082	B2	20011225		
	TW 421830	B	20010211	TW 1999-88102080	19990210
	US 6162739	A	20001219	US 1999-248094	19990211
PRAI	DE 1998-19805525	A	19980211		

AB An **etching** medium contains an agent which affects viscosity, surface energy, and/or vapor pressure of the **etching** medium in addn. to HF or a (HF + NH4F) combination which is effective for wet **etching** of **semiconductor** disks, esp. Si wafers. During **etching**, a SiO2 layer is removed from the upper side, an edge, and a defined edge area of the lower side of the Si wafer. Under-**etching** in a defined area attains that the edge of the SiO2 layer

remaining on the bottom side of the wafer is smooth.
ST wet **etching semiconductor**; silicon wafer wet **etching**
IT **Etching**
(of **semiconductor** disks)
IT **Semiconductor** devices
(wet-**etching** of)
IT 50-21-5, Lactic acid, uses 56-81-5, Glycerol, uses **64-17-5**, Ethanol, uses 64-18-6, Formic acid, uses 64-19-7, Acetic acid, uses 65-85-0, Benzoic acid, uses 67-56-1, Methanol, uses **67-63-0**, Isopropanol, uses 67-64-1, Acetone, uses **71-36-3**, Butanol, uses 77-92-9, Citric acid, uses 79-09-4, Propionic acid, uses 107-21-1, Ethylene glycol, uses 107-92-6, Butyric acid, uses 111-46-6, Diethylene glycol, uses 124-38-9, Carbon dioxide, uses 141-78-6, Acetic acid ethyl ester, uses 144-55-8, Sodium bicarbonate, uses 144-62-7, Oxalic acid, uses 7647-01-0, Hydrochloric acid, uses **7664-38-2**, Phosphoric acid, uses **7664-93-9**, Sulfuric acid, uses
RL: MOA (Modifier or additive use); USES (Uses)
(in **etching** medium for silicon wafers)
IT 7664-39-3, Hydrofluoric acid, processes 12125-01-8, Ammonium fluoride
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(in wet-**etching** of silicon wafers)
IT 7440-21-3, Silicon, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(wet-**etching** of silicon wafers)
RE.CNT 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
(1) Anon; JP 09181026 A
(2) Anon; US 4087367
(3) Anon; US 4795582 CAPLUS
(4) Anon; US 4871422 CAPLUS
(5) Anon; US 5439553 CAPLUS
(6) Gaulhofer, E; Solid State Technology 1991, 219, P57
(7) Monk, D; J Electrochem Soc 1994, V141(1), P264 CAPLUS

L27 ANSWER 19 OF 38 CAPLUS COPYRIGHT 2002 ACS
AN 1999:390297 CAPLUS
DN 131:24962
TI Electrolytic **etching** method, method for producing photoelectromotive force element and method for treatment of defective of photoelectromotive force element
IN Ichinose, Hirofumi; Ueno, Yukie; Murakami, Tsutomu; Sawayama, Ippei; Hisamatsu, Masaya
PA Canon K. K., Japan
SO Jpn. Kokai Tokkyo Koho, 12 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM H01L021-3063
ICS C25F003-12; H01L021-306; H01L031-04
CC 72-7 (Electrochemistry)
Section cross-reference(s): 52
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 11162931	A2	19990618	JP 1998-257399	19980911
	US 2001007306	A1	20010712	US 1998-149280	19980909
PRAI	JP 1997-246273	A	19970911		

AB Electrolytic **etching** is carried out in which the contact angle of the electrolytic soln. to the material **etched** is .ltoreq.70.degree.. An additive which is selected from the group consisting of polyethylene glycol, polypropylene glycol, acetylene alc.,

ethanol, or their copolymers and surfactant is used to the electrolytic **etching** bath. A photoelectromotive force element is fabricated by forming an **etched** elec. conductive layer on a **semiconductor** layer on a substrate. The method for treatment of defectives of a photoelectromotive force element involves redn. of the elec. conductive layer surrounding a short circuit. Patterning with excellent selectivity can be carried out.

ST electrolytic **etching** photoelectromotive force element defective treatment

IT Solar cells
(amorphous photoelectromotive force element; electrolytic **etching** method, method for producing photoelectromotive force element and method for treatment of defective of photoelectromotive force element)

IT Surfactants
(as an additive to electrolytic **etching** bath)

IT Polyoxyalkylenes, uses
RL: MOA (Modifier or additive use); USES (Uses)
(as an additive to electrolytic **etching** bath)

IT **Etching**
(electrochem.; electrolytic **etching** method, method for producing photoelectromotive force element and method for treatment of defective of photoelectromotive force element)

IT **64-17-5**, Ethanol, uses 25322-68-3 25322-69-4 32038-79-2, Ethynol
RL: MOA (Modifier or additive use); USES (Uses)
(as an additive to electrolytic **etching** bath)

IT **7664-93-9**, Sulfuric acid, uses
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(electrolytic **etching** from bath contg.)

IT 7440-21-3, Silicon, uses
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(substrate; electrolytic **etching** method, method for producing photoelectromotive force element and method for treatment of defective of photoelectromotive force element)

L27 ANSWER 20 OF 38 CAPLUS COPYRIGHT 2002 ACS
AN 1999:219925 CAPLUS
DN 130:260620
TI Planarization of **semiconductor** substrates and an aqueous **etching** solution for it
IN Kruwinus, Hans-Jurgen; Sellmer, Reinhard
PA SEZ Semiconductor-Equipment Zubehor Fur Die Halbleiterfertigung Ag, Austria
SO Eur. Pat. Appl., 9 pp.
CODEN: EPXXDW
DT Patent
LA German
IC ICM H01L021-3105
ICS H01L021-321; H01L021-311; H01L021-3213
CC 76-3 (Electric Phenomena)
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI EP 905754	A2	19990331	EP 1998-115931	19980824
EP 905754	A3	20010516		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
AT 9701658	A	20020515	AT 1997-1658	19970930
DE 19806406	C1	19990729	DE 1998-19806406	19980217
JP 11162930	A2	19990618	JP 1998-276271	19980930

EP 938133 A2 19990825 EP 1999-101974 19990201
EP 938133 A3 19991103
EP 938133 B1 20010912
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO
AT 205636 E 20010915 AT 1999-101974 19990201
JP 11312664 A2 19991109 JP 1999-68781 19990209
US 6169038 B1 20010102 US 1999-251288 19990217
PRAI AT 1997-1658 A 19970930
DE 1998-19806406 A 19980217

AB To remove a layer from a substrate having trenches or contact holes such that the layer remains only in the trenches or contact holes, an **etchant** is supplied as a continuous stream at a flow rate of .gtoreq.0.4 L/min, so that the **etchant** covers the whole surface of the substrate. A differential **etching** rate occurs; the **etching** rate in the areas between the trenches or contact holes is higher than that in the regions of the trenches themselves, so the layer on the surface of the substrate is **etched** away faster than that in the trenches.

ST planarization **semiconductor** substrate aq **etching** soln

IT Acids, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(org.; planarization of **semiconductor** substrates with aq. **etching** solns. contg.)

IT **Etching**
Semiconductor materials
(planarization of **semiconductor** substrates with aq. **etching** soln.)

IT Contact holes
(planarization of **semiconductor** substrates with aq. **etching** soln. by removing layers deposited over)

IT Alcohols, processes
Glycols, processes
Polyoxyalkylenes, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(planarization of **semiconductor** substrates with aq. **etching** solns. contg.)

IT **7664-38-2**, Phosphoric acid, processes 7697-37-2, Nitric acid, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(**etching** by; in planarization of **semiconductor** substrates)

IT 7647-01-0, Hydrogen chloride, processes 7664-39-3, Hydrogen fluoride, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(**etching** by; planarization of **semiconductor** substrates with aq. **etching** solns. contg.)

IT 7429-90-5, Aluminum, processes 7440-50-8, Copper, processes 11129-80-9, Platinum silicide 12627-41-7, Tungsten silicide 12738-91-9, Titanium silicide 59141-85-4, Gold silicide
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(planarization of **semiconductor** substrates by **etching** of)

IT 7440-21-3, Silicon, processes 7631-86-9, Silica, processes
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(planarization of **semiconductor** substrates by **etching** of layers on)

IT 56-81-5, Glycerol, processes **64-17-5**, Ethanol, processes 64-19-7, Acetic acid, processes **7664-93-9**, Sulfuric acid, processes 7727-54-0, Ammonium persulfate 12033-62-4, Tantalum nitride (TaN) 12125-01-8, Ammonium fluoride (NH4F) 13445-49-3D,

Peroxydisulfuric acid, alkali metal salts 13530-68-2D, Chromic acid, alkali metal salts 15593-29-0, Sodium peroxymonosulfate (Na2(SO5)) 25322-68-3, Polyethylene glycol
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(planarization of **semiconductor** substrates with aq. **etching** solns. contg.)

L27 ANSWER 21 OF 38 CAPLUS COPYRIGHT 2002 ACS
AN 1999:213100 CAPLUS
DN 130:259318
TI Manufacture of **semiconductor** light-emitting devices
IN Arakawa, Satoshi; Yamanaka, Nobumitsu; Nishikata, Kazuaki; Kasukawa, Akihiko
PA Furukawa Electric Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 8 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM H01S003-18
CC 73-10 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 76
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 11087836	A2	19990330	JP 1997-241003	19970905

AB The manufg. process, suitable for forming a laser device, comprises the steps of: forming, on a substrate, an **etch**-stop and a 1st under cladding layer; forming a ring mask, and forming therein a mesa comprising a 2nd under cladding, a MQW active, and an upper cladding layer; removing the ring mask; forming a stripe mask; and **etching** the upper cladding and the 1st under cladding using the **etch** stop layer for forming a MQW DH stripe structure.
ST gallium indium arsenide phosphide MQW laser manuf
IT **Etching**
Semiconductor lasers
(manuf. of **semiconductor** light-emitting devices)
IT 12033-89-5, Silicon nitride, uses 106070-25-1, Gallium indium arsenide (GaInAs)
RL: DEV (Device component use); USES (Uses)
(manuf. of **semiconductor** light-emitting devices)
IT **64-17-5**, Ethanol, reactions 7647-01-0, Hydrochloric acid, reactions **7664-38-2**, Phosphoric acid, reactions **7664-93-9**, Sulfuric acid, reactions 7722-84-1, Hydrogen peroxide, reactions 7726-95-6, Bromine, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(manuf. of **semiconductor** light-emitting devices)

L27 ANSWER 22 OF 38 CAPLUS COPYRIGHT 2002 ACS
AN 1999:134050 CAPLUS
DN 130:260098
TI Wet-chemical nanoscale patterning of GaAs surfaces using atomic force microscope lithography
AU Klehn, B.; Skaberna, S.; Kunze, U.
CS Lehrstuhl fur Werkstoffe der Elektrotechnik, Ruhr-Universitat Bochum, Bochum, D-44780, Germany
SO Superlattices and Microstructures (1999), 25(1/2), 473-476
CODEN: SUMIEK; ISSN: 0749-6036
PB Academic Press
DT Journal
LA English
CC 76-3 (Electric Phenomena)
AB Sub-100 nm V-grooves in GaAs surfaces have been fabricated by patterning a

thin photoresist layer with an at. force microscope (AFM) and subsequent wet-chem. **etching**. The nanolithog. is based on the dynamic ploughing technique. Anisotropic **etchants** under study are Br-MeOH-isopropanol, H2SO4-H2O2-H2O, citric acid-H2O2-H2O, and NH4OH-H2O2-H2O. Along the [110] direction the **etched** grooves are V-shaped, along [1.hivin.10] the profile is U-shaped. Best results of 50-60-nm wide V-grooves with straight edges and smooth sidewalls are obtained from Br-MeOH-isopropanol, the other **etchants** form rough grooves. Concerning the reproducibility of the patterning process, the aq. **etch** solns. exceed the Br **etchant**. (c) 1999 Academic Press.

ST gallium arsenide atomic force microscope nanolithog **etching**

IT Lithography
(nanoscale; wet-chem. nanoscale patterning of GaAs surfaces using at. force microscope lithog.)

IT **Etching**
(patterning photoresist layer with AFM followed by wet chem. **etching**)

IT Photoresists
(patterning photoresist layer with AFM followed by wet **etching**)

IT Atomic force microscopes
Semiconductor device fabrication
(wet-chem. nanoscale patterning of GaAs surfaces using at. force microscope lithog.)

IT 67-56-1, Methanol, processes **67-63-0**, Isopropanol, processes 77-92-9, Citric acid, processes 1336-21-6, Ammonium hydroxide ((NH4)(OH)) **7664-93-9**, Sulfuric acid, processes 7726-95-6, Bromine, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(wet chem. **etching** using **etchants** contg.)

IT 1303-00-0, Gallium arsenide, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(wet-chem. nanoscale patterning of GaAs surfaces using at. force microscope lithog.)

RE.CNT 23 THERE ARE 23 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

(1) Avramescu, A; Appl Phys Lett 1998, V72, P716 CAPLUS
(2) Avramescu, A; Jpn J Appl Phys 1997, V36, P4057 CAPLUS
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(22) Wang, D; Appl Phys Lett 1995, V67, P1295 CAPLUS
(23) Wendel, M; Appl Phys Lett 1994, V65, P1775 CAPLUS

L27 ANSWER 23 OF 38 CAPLUS COPYRIGHT 2002 ACS
AN 1999:21615 CAPLUS

DN 130:87970
TI Method for producing a micro optical **semiconductor** lens
IN Tran, Dean; Anderson, Eric R.; Strijek, Ronald L.; Rezek, Edward A.
PA TRW Inc., USA
SO U.S., 13 pp.
CODEN: USXXAM
DT Patent
LA English
IC ICM H01L027-14
ICS H01L031-0304
NCL 430321000
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 76
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 5853960	A	19981229	US 1998-40636	19980318
	JP 11298046	A2	19991029	JP 1998-372169	19981228
PRAI	US 1998-40636		19980318		

AB Methods for fabricating Group III-V **semiconductor** microlenses for hybrid integration with microoptical devices are described which entail forming lenses from a **semiconductor** wafer by selectively **etching** a surface of the **semiconductor** wafer and forming a lens arm from the **semiconductor** wafer on a surface opposite the surface by selectively **etching** the surface of the **semiconductor** wafer. The lens and lens arm may then be cleaved from the substrate wafer and directly mounted to a microoptical device. The lens may be provided with an antireflective coating and the lens arm may be metalized prior to cleaving. The **etching** step may be a wet or dry **etch**. By using a **semiconductor** material to form the lenses the thermal stability of the integrated systems is enhanced over conventional systems.

ST **semiconductor** microlens prodn
IT **Etching**
(dry; in **semiconductor** microlens prodn.)
IT Sputtering
(**etching**, reactive; in **semiconductor** microlens prodn.)
IT Photoresists
(in **semiconductor** microlens prodn.)
IT **Etching**
(plasma; in **semiconductor** microlens prodn.)
IT **Etching**
(selective; in **semiconductor** microlens prodn.)
IT Microlenses
(**semiconductor** microlens prodn.)
IT **Semiconductor** device fabrication
(**semiconductor** microlens prodn. in)
IT **Etching**
(sputter, reactive; in **semiconductor** microlens prodn.)
IT 7783-40-6, Magnesium fluoride 13709-52-9, Hafnium fluoride
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(antireflective coating contg.; **semiconductor** microlens prodn.)
IT 64-19-7, Acetic acid, uses 67-56-1, Methanol, uses **67-63-0**, Isopropanol, uses 74-82-8, Methane, uses 74-88-4, Methyl iodide, uses 75-03-6, Ethyl iodide 75-30-9, 2-Iodopropane 75-71-8, Dichlorodifluoromethane 76-16-4, Hexafluoroethane 77-92-9, Citric acid, uses 1333-74-0, Hydrogen, uses 1336-21-6, Ammonium hydroxide 7440-37-1, Argon, uses 7647-01-0, Hydrochloric acid, uses **7664-38-2**, Phosphoric acid, uses 7664-39-3, Hydrofluoric acid,

uses **7664-93-9**, Sulfuric acid, uses 7697-37-2, Nitric acid:, uses 7705-08-0, Iron chloride (FeCl3), uses 7722-84-1, Hydrogen peroxide, uses 7726-95-6, Bromine, uses 7758-05-6 7778-50-9, Potassium dichromate 7782-44-7, Oxygen, uses 7782-50-5, Chlorine, uses 7789-58-4, Iodine bromide (IBr3) 10035-10-6, Hydrobromic acid, uses
RL: NUU (Other use, unclassified); USES (Uses)
(**etchant** contg.; in **semiconductor** microlens prodn.)

IT 1344-28-1, Aluminum oxide, uses 7631-86-9, Silicon dioxide, uses 12033-89-5, Silicon nitride, uses
RL: DEV (Device component use); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(mask compns. and antireflective coatings contg.; in **semiconductor** microlens prodn.)

IT 111-15-9, 2-Ethoxyethylacetate 123-86-4, n-Butyl acetate 999-97-3, Hexamethyldisilazane 1330-20-7, Xylene, uses
RL: NUU (Other use, unclassified); USES (Uses)
(mask compns. contg.; in **semiconductor** microlens prodn.)

IT 7440-06-4, Platinum, uses 7440-32-6, Titanium, uses 7440-57-5, Gold, uses
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(metalization; **semiconductor** microlens prodn.)

IT 1303-00-0, Gallium arsenide, uses 1303-11-3, Indium arsenide, uses 12063-98-8, Gallium phosphide, uses 22398-80-7, Indium phosphide, uses
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(**semiconductor** microlens prodn.)

RE.CNT 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

(1) Anon; JP 07-030082 1995 CAPLUS
(2) Anon; Appl Phys Lett 1983, V43, P624
(3) Anon; Electronics Letters 1988, V24(2), P109
(4) Anon; IEEE Electronic Components and Technology Conference 1997, P7
(5) Anon; Optical Engineering 1994, V33(11), P3547
(6) Anon; Optical Engineering 1994, V33(11), P3552
(7) Anon; Optical Engineering 1994, V33(11), P3578
(8) Anon; Optical Engineering 1997, V33(11), P1095
(9) Anon; SPIE 1995, V2383, P310
(10) Basavanhally; US 5346583 1994
(11) Brewer; US 5018164 1991
(12) Wakabayshi; US 5316640 1994 CAPLUS

L27 ANSWER 24 OF 38 CAPLUS COPYRIGHT 2002 ACS

AN 1998:813611 CAPLUS

DN 130:89201

TI Production method of solder bumps for flip-chip mounting of **semiconductor** device , solder bumps themselves, and their analysis

IN Huh, Nam-Joong; Kwon, Yong-Hwan; Park, Jong-Han

PA Samsung Electronics Co., Ltd., S. Korea

SO Jpn. Kokai Tokkyo Koho, 11 pp.
CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM H01L021-60
ICS H01L021-60; G01N021-88; H01L023-12

CC 76-3 (Electric Phenomena)
Section cross-reference(s): 79

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 10335364	A2	19981218	JP 1998-47948	19980227
	JP 3004959	B2	20000131		
	US 6013572	A	20000111	US 1998-63716	19980421

PRAI KR 1997-21022 A 19970527

AB The title method involves forming a boundary film on a **semiconductor** substrate by a photolithog. method, removing the photoresist used in the photolithog. method from the desired regions of the boundary film, successively plating the regions exposed by the removal with Ag and Sn, completely removing the photoresist, **etching** the boundary film exposed by the complete removal, and reflowing the platings to obtain an alloy having a desired compn. Specifically, the boundary film may comprise a layer of Ti, Cr, and/or Ti-W and a layer of Cu and/or Ni. A method for anal. involves cutting solder bumps to a desired size, and mounting on an epoxy resin to obtain a sample for, e.g., electron microprobe anal.

ST solder bump **semiconductor** device electron microprobe analysis; electroplating photolithog **etching** solder bump

IT **Etching**
Photolithography
(in prodn. and anal. of solder bumps for flip-chip mounting of **semiconductor** device)

IT Electrodeposition
(of silver and titanium in prodn. and anal. of solder bumps for flip-chip mounting of **semiconductor** device)

IT Electron microprobe analysis
(of solder bumps for flip-chip mounting of **semiconductor** device)

IT Solders
(silver and tin; prodn. and anal. of solder bumps for flip-chip mounting of **semiconductor** device)

IT Bump contacts
(solder; prodn. and anal. of solder bumps for flip-chip mounting of **semiconductor** device)

IT 7440-02-0, Nickel, processes 7440-32-6, Titanium, processes 7440-47-3, Chromium, processes 7440-50-8, Copper, processes 12642-02-3
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(boundary film; in prodn. and anal. of solder bumps for flip-chip mounting of **semiconductor** device)

IT 67-56-1, Methanol, uses 7647-01-0, Hydrogen chloride, uses 7664-39-3, Hydrogen fluoride, uses **7664-93-9**, Sulfuric acid, uses 7697-37-2, Nitric acid, uses 7722-84-1, Hydrogen peroxide, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(**etchant** in prodn. and anal. of solder bumps for flip-chip mounting of **semiconductor** device)

IT **67-63-0**, Isopropanol, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(for resist removal in prodn. and anal. of solder bumps for flip-chip mounting of **semiconductor** device)

IT 7440-22-4, Silver, processes 7440-31-5, Tin, processes
RL: ANT (Analyte); DEV (Device component use); PEP (Physical, engineering or chemical process); ANST (Analytical study); PROC (Process); USES (Uses)
(prodn. and anal. of solder bumps for flip-chip mounting of **semiconductor** device)

L27 ANSWER 25 OF 38 CAPLUS COPYRIGHT 2002 ACS

AN 1998:527177 CAPLUS

DN 129:163555

TI Composition for cleaning and **etching** electronic display and substrate

IN Lee, Ke Won

PA S. Korea

SO PCT Int. Appl., 36 pp.
CODEN: PIXXD2

DT Patent

LA English

IC C09K013-04; C03C015-00; C23F001-24; H01L021-306; H01L021-465
CC 49-11 (Industrial Inorganic Chemicals)
Section cross-reference(s): 46, 56, 74, 76
FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9831768	A1	19980723	WO 1998-KR11	19980121
	W: CN, JP, US				
	RW: AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
	EP 892840	A1	19990127	EP 1998-901121	19980121
	R: DE, FR, GB, NL				
	CN 1216059	A	19990505	CN 1998-800045	19980121
	CN 1064986	B	20010425		
	JP 2000507304	T2	20000613	JP 1998-534157	19980121
	US 6194365	B1	20010227	US 1998-142750	19980915
PRAI	KR 1997-1539	A	19970121		
	KR 1997-53384	A	19971017		
	WO 1998-KR11	W	19980121		

AB This invention relates to a compn. for cleaning and **etching** the surface in fabricating electronic displays and the substrates. Specifically this invention relates to a compn. to effectively remove the contaminants by cleaning, to remove any contaminants on the surface, and to **etch** SiO2 and Si substrate in the fabrication process of electronic displays, quartz devices, wafer, and **semiconductor** wafer. According to this invention, it is possible to clean and **etch** more efficiently and conveniently. Also the surface roughness is improved. Further the compn. of this invention can be made available in powder type for prepg. a defined amt. of soln. It provides the conveniences in transportation, handling and storage.

ST electronic display cleaning **etching** compn; quartz device cleaning **etching** compn; **etching** cleaning compn **semiconductor** wafer

IT Cast alloys
RL: DEV (Device component use); USES (Uses)
(aluminum; compns. for cleaning and **etching** electronic display and substrate)

IT Cleaning
(chem.; compns. for cleaning and **etching** electronic display and substrate)

IT Detergents
Etching
Lithography
Optical imaging devices
Semiconductor materials
Surfactants
(compns. for cleaning and **etching** electronic display and substrate)

IT Fluorides, uses
Sulfonates
Sulfonic acids, uses
RL: NUU (Other use, unclassified); USES (Uses)
(compns. for cleaning and **etching** electronic display and substrate)

IT Hydrocarbons, uses
RL: MOA (Modifier or additive use); USES (Uses)
(fluoro; compns. for cleaning and **etching** electronic display and substrate)

IT 7429-90-5, Aluminum, uses 7440-21-3, Silicon, uses 14808-60-7, Quartz, uses
RL: DEV (Device component use); USES (Uses)
(compns. for cleaning and **etching** electronic display and substrate)

IT 7631-86-9, Silica, uses

RL: MOA (Modifier or additive use); USES (Uses)
(compns. for cleaning and **etching** electronic display and substrate)

IT 62-76-0, Sodium oxalate 63-74-1, Sulfonyl amide 64-19-7, Acetic acid, uses **67-63-0**, 2-Propanol, uses 97-05-2, Sulfosalicylic acid 144-62-7, Oxalic acid, uses 831-54-9, Sodium sulfosalicylate 1333-83-1, Sodium bifluoride 1341-49-7, Ammonium bifluoride 5329-14-6, Sulfamic acid 6009-70-7, Ammonium oxalate monohydrate 6100-20-5 6484-52-2, Ammonium nitrate, uses 6487-48-5, Potassium oxalate monohydrate 7631-99-4, Sodium nitrate, uses **7664-38-2**, Phosphoric acid, uses **7664-93-9**, Sulfuric acid, uses 7681-49-4, Sodium fluoride, uses 7727-21-1, Potassium persulfate 7727-54-0, Ammonium persulfate 7757-79-1, Potassium nitrate, uses 7773-06-0, Ammonium sulfamate 7775-27-1, Sodium persulfate 7787-32-8, Barium fluoride 7789-23-3, Potassium fluoride 7789-29-9, Potassium bifluoride 10022-31-8, Barium nitrate 12125-01-8, Ammonium fluoride 13826-83-0, Ammonium fluoroborate
RL: NUU (Other use, unclassified); USES (Uses)
(compns. for cleaning and **etching** electronic display and substrate)

L27 ANSWER 26 OF 38 CAPLUS COPYRIGHT 2002 ACS
AN 1997:803263 CAPLUS
DN 128:42188
TI A novel surface preparation and post-**etch** removal technique for InGaAs sidewalls
AU Tabatabaei, S. A.; Porkolab, G. A.; Agarwala, S.; Johnson, F. G.; Merritt, S. A.; King, O.; Dagenais, M.; Chen, Y. J.; Stone, D. R.
CS Joint Program for Advanced Electronic Materials, Electric Engineering Department, Univ. of Maryland, College Park, MD, 20742, USA
SO Materials Research Society Symposium Proceedings (1997), 477(Science and Technology of Semiconductor Surface Preparation), 317-321
CODEN: MRSPDH; ISSN: 0272-9172
PB Materials Research Society
DT Journal
LA English
CC 76-3 (Electric Phenomena)
Section cross-reference(s): 73
AB This paper describes in detail a surface prepn. and post-**etch** removal technique developed for InGaAs sidewalls. It illustrates the results demonstrating the effect of sidewall post-**etch**, surface prepn., and surface passivation on the performance of high speed InGaAs detectors. Dark c.d. for circular diodes with a diam. size varying between 10 and 100 .mu.m was measured at a reverse bias voltage of -5 V. The effectiveness of various surface prepn. techniques was studied by measuring the immediate improvement in dark c.d., as well as its long-term stability. The benefits of this new technique compared to other techniques we have investigated include improved device characteristics, long-term stability, as well as a much less crit. process to achieve optimum surface properties.
ST gallium indium arsenide sidewall photodiode; **etching** gallium indium arsenide detector
IT Sputtering
(**etching**, ion-beam; novel surface prepn. and post-**etch** removal technique for InGaAs sidewalls)
IT Sputtering
(**etching**, reactive; novel surface prepn. and post-**etch** removal technique for InGaAs sidewalls)
IT Controlled atmospheres
(nitrogen; novel surface prepn. and post-**etch** removal technique for InGaAs sidewalls)
IT **Etching**
Optical detectors

Photodiodes
Semiconductor device fabrication
(novel surface prepn. and post-**etch** removal technique for InGaAs sidewalls)

IT Cleaning
(plasma, oxygen; novel surface prepn. and post-**etch** removal technique for InGaAs sidewalls)

IT **Etching**
(sputter, ion-beam; novel surface prepn. and post-**etch** removal technique for InGaAs sidewalls)

IT **Etching**
(sputter, reactive; novel surface prepn. and post-**etch** removal technique for InGaAs sidewalls)

IT 7727-37-9, Nitrogen, uses
RL: NUU (Other use, unclassified); USES (Uses)
(annealing atm.; novel surface prepn. and post-**etch** removal technique for InGaAs sidewalls)

IT **67-63-0**, Isopropanol, uses 75-59-2, Tetramethylammonium hydroxide 7647-01-0, Hydrochloric acid, uses **7664-38-2**, Phosphoric acid, uses **7664-93-9**, Sulfuric acid, uses 7722-84-1, Hydrogen peroxide (H2O2), uses
RL: NUU (Other use, unclassified); USES (Uses)
(**etchant**; novel surface prepn. and post-**etch** removal technique for InGaAs sidewalls)

IT 7440-06-4, Platinum, processes 7440-32-6, Titanium, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(mask; novel surface prepn. and post-**etch** removal technique for InGaAs sidewalls)

IT 199745-60-3, PI 2711
RL: NUU (Other use, unclassified); USES (Uses)
(neg. photosensitive polyimide; novel surface prepn. and post-**etch** removal technique for InGaAs sidewalls)

IT 106070-25-1, Gallium indium arsenide
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(novel surface prepn. and post-**etch** removal technique for InGaAs sidewalls)

IT 74-82-8, Methane, uses 1333-74-0, Hydrogen, uses 7440-37-1, Argon, uses
RL: NUU (Other use, unclassified); USES (Uses)
(novel surface prepn. and post-**etch** removal technique for InGaAs sidewalls)

L27 ANSWER 27 OF 38 CAPLUS COPYRIGHT 2002 ACS
AN 1997:315689 CAPLUS
DN 126:337670
TI Making a high-voltage, high-speed gallium arsenide power Schottky diode
IN Ashkinazi, German; Meyler, Boris; Nathan, Menachem; Zolotarevski, Leonid; Zolotarevski, Olga
PA Ramot University Authority for Applied Research & Industrial Development, Israel
SO U.S., 7 pp., Cont. of U. S. Ser. No. 24,965, abandoned.
CODEN: USXXAM
DT Patent
LA English
IC ICM H01L021-265
NCL 438571000
CC 76-3 (Electric Phenomena)
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 5622877	A	19970422	US 1994-326893	19941021

PRAI US 1993-24965 19930302

AB A GaAs power Schottky diode with a chem. deposited Ni barrier has reverse breakdown voltage 140 V; forward voltage drop at 50 A/cm2 0.7 V at 23.degree., 0.5 V at 150.degree., and 0.3 V at 250.degree.; reverse leakage c.d. at -50 V 0.1 .mu.A/cm2 at 23.degree. and 1 mA/cm2 at 150.degree.. The diode is made by chem. depositing a Ni barrier electrode on a **semiconductor** which includes GaAs and then **etching** the device to create side portions which are treated and protected to create the Schottky device.

ST gallium arsenide power Schottky diode prepn

IT Cleaning
Etching
(in making high-voltage, high-speed gallium arsenide power Schottky diodes)

IT Schottky diodes
(making high-voltage, high-speed gallium arsenide power Schottky diodes)

IT **7664-93-9**, Sulfuric acid, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(**etchant**; in making high-voltage, high-speed gallium arsenide power Schottky diodes)

IT 1336-21-6, Ammonium hydroxide ((NH4)(OH))
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(in cleaning for nickel deposition in making high-voltage, high-speed gallium arsenide power Schottky diodes)

IT 1303-00-0, Gallium arsenide, processes
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(making high-voltage, high-speed gallium arsenide power Schottky diodes)

IT 7440-02-0, Nickel, processes
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(making high-voltage, high-speed gallium arsenide power Schottky diodes contg.)

IT 56-23-5, Carbon tetrachloride, processes 67-56-1, Methanol, processes **67-63-0**, Isopropyl alcohol, processes 67-64-1, Acetone, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(washing by; in cleaning for nickel deposition in making high-voltage, high-speed gallium arsenide power Schottky diodes)

L27 ANSWER 28 OF 38 CAPLUS COPYRIGHT 2002 ACS

AN 1997:12914 CAPLUS

DN 126:137541

TI **Etch**-mask of pyrolytic-photoresist thin-film for self-aligned fabrication of smooth and deep faceted three-dimensional microstructures

AU Porkolab, G. A.; Hsu, Shih-Hsiang; Hryniewicz, John V.; Lin, Wenhua; Chen, Y. J.; Agarwala, Sambhu; Johnson, F. G.; King, Oliver; Dagenais, M.; Stone, D. R.

CS Dep. of Computer Science and Electrical Engineering, University of Maryland Baltimore County, Baltimore, MD, 21228, USA

SO Journal of Vacuum Science & Technology, B: Microelectronics and Nanometer Structures (1996), 14(6), 3650-3653
CODEN: JVTBD9; ISSN: 0734-211X

PB American Institute of Physics

DT Journal

LA English

CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

AB **Etch**-mask thin-film material that is particulate-free and topog. smooth has been created from a std. photoresist spun onto std. **semiconductor** substrates such as gallium arsenide, indium

phosphide, and silicon, and then pyrolyzed by exposing to a temp. of 300.degree.C in air atm. for 1 min on a std. lab. hot-plate. The resulting pyrolytic-photoresist thin-film is chem. inert to many std. org. solvents including the solvent of photoresist itself and to many inorg. reagents used in **semiconductor** processing. Therefore the pyrolytic-photoresist can be patterned by sulfur hexafluoride reactive ion **etching** via a std. photoresist mask. Upon stripping the std. photoresist in a mixt. of 1:1/acetone:developer agitated ultrasonically, the remaining patterned pyrolytic-photoresist performs as an excellent **etch**-mask in chem. assisted ion beam **etching** and reactive ion **etching** systems. Thus it can be a key material in the multilayer masking technique used to sculpt self-aligned three-dimensional microstructures with deep and smooth facets which are needed for example for photonic integrated circuits and micro-electro-mech. systems.

ST pyrolytic photoresist **etch** photomask plasma **etching**

IT **Etching**
Photomasks (lithographic masks)
Photoresists
Thermal decomposition
(pyrolytic resist as **etch**-mask in plasma-based **etching** systems)

IT 75-59-2, Tetramethyl ammonium hydroxide 186467-52-7, OCG-OPD 4262
RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(developer; pyrolytic resist as **etch**-mask in plasma-based **etching** systems)

IT 1336-21-6, Ammonium hydroxide 2551-62-4, Sulfur hexafluoride 7647-01-0, Hydrochloric acid, processes **7664-38-2**, Phosphoric acid, processes **7664-93-9**, Sulfuric acid, processes 7697-37-2, Nitric acid, processes 7722-84-1, Hydrogen peroxide, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(**etchant**; pyrolytic resist as **etch**-mask in plasma-based **etching** systems)

IT 1303-00-0, Gallium arsenide, processes 7440-21-3, Silicon, processes 22398-80-7, Indium phosphide, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(pyrolytic resist as **etch**-mask in plasma-based **etching** systems)

IT 872-50-4, N-Methyl-2-pyrrolidone, processes
RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(resist stripper, Microposit 2001; pyrolytic resist as **etch**-mask in plasma-based **etching** systems)

IT 186467-51-6, OCG-OiR 897-21i
RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(resist; pyrolytic resist as **etch**-mask in plasma-based **etching** systems)

IT 67-56-1, Methanol, uses **67-63-0**, Isopropanol, uses 67-64-1, Acetone, uses 71-55-6, 1,1,1-Trichloroethane
RL: NUU (Other use, unclassified); USES (Uses)
(solvent; pyrolytic resist as **etch**-mask in plasma-based **etching** systems)

L27 ANSWER 29 OF 38 CAPLUS COPYRIGHT 2002 ACS
AN 1996:15455 CAPLUS
DN 124:43338
TI Cleaning of **semiconductor** wafers
IN Mori, Tadashi; Oosako, Takashi
PA Oki Electric Ind Co Ltd, Japan
SO Jpn. Kokai Tokkyo Koho, 6 pp.
CODEN: JKXXAF

DT Patent
LA Japanese
IC ICM H01L021-306
ICS H01L021-304
ICA B08B003-00
CC 76-3 (Electric Phenomena)
Section cross-reference(s): 72
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 07263402	A2	19951013	JP 1994-56306	19940325

AB The process typically comprises the steps of: forming a thermal oxide and a poly-Si layer on a Si wafer; washing the coated wafer with a soln. contg. H2SO4 and H2O2; removing the oxide layer and then **etching** the poly-Si layer using a 1% HF soln., thereby forming a hydrophilic surface (H2O-bead contact angle > 60.degree.); and washing with DI water, exposing to iso-Pr alc. vapor and drying the surface.
ST silicon wafer surface ultracleaning process
IT Cleaning
Semiconductor materials
(cleaning of **semiconductor** wafers)
IT **67-63-0**, Isopropyl alcohol, uses 7664-39-3, Hydrogen fluoride, uses **7664-93-9**, Sulfuric acid, uses 7722-84-1, Hydrogen peroxide, uses
RL: ARG (Analytical reagent use); DEV (Device component use); ANST (Analytical study); USES (Uses)
(cleaning of **semiconductor** wafers)
IT 7440-21-3, Silicon, uses
RL: DEV (Device component use); USES (Uses)
(cleaning of **semiconductor** wafers)

L27 ANSWER 30 OF 38 CAPLUS COPYRIGHT 2002 ACS
AN 1995:490358 CAPLUS
DN 122:228726
TI Rinsing solutions for resist removal in manufacture of **semiconductor** devices and its
IN Goto, Hideto; Myazaki, Masao; Mori, Kyoto
PA Texas Instruments Japan, Japan; Kanto Kagaku
SO Jpn. Kokai Tokkyo Koho, 6 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM H01L021-304
ICS C11D017-00; C23G005-032; H05K003-26
CC 76-3 (Electric Phenomena)
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 07037846	A2	19950207	JP 1993-224895	19930722

AB The rinsing solns. contain water-sol. monohydric alcs. and acids. The manufg. process involves the following steps: (1) forming a C-contg. Al conductive layer on a **semiconductor** substrate, (2) **etching** the conductive layer with a resist mask, (3) removing the resist with alkali, and (4) rinsing with the soln. The rinsing soln. is noncorrosive to Al-Si-Cu wiring.
ST noncorrosive rinse soln resist **semiconductor**; acid alc rinsing **semiconductor** device
IT **Semiconductor** devices
(noncorrosive rinsing soln. for alk. resist removal in **semiconductor** device manuf.)
IT 50-70-4, D-Sorbitol, uses **64-17-5**, Ethanol, uses 64-19-7, Acetic acid, uses 65-85-0, Benzoic acid, uses 67-56-1, Methanol, uses **67-63-0**, Isopropyl alcohol, uses 144-62-7, Oxalic acid, uses

7664-93-9, Sulfuric acid, uses 7697-37-2, Nitric acid, uses 27176-87-0, Dodecylbenzenesulfonic acid
RL: TEM (Technical or engineered material use); USES (Uses)
(noncorrosive rinsing soln. for alk. resist removal in **semiconductor** device manuf.)
IT 37254-60-7
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(wiring; noncorrosive rinsing soln. for alk. resist removal in **semiconductor** device manuf.)

L27 ANSWER 31 OF 38 CAPLUS COPYRIGHT 2002 ACS
revisit
AN 1994:470998 CAPLUS
DN 121:70998
TI A new cleaning concept for particle and metal removal on Si surfaces
AU Meuris, M.; Verhaverbeke, S.; Mertens, P. W.; Schmidt, H. F.; Rotondaro, A. L. P.; Heyns, M. M.; Philipossian, A.
CS IMEC, Louvain, 3001, Belg.
SO Proc. - Electrochem. Soc. (1994), 94-7(PROCEEDINGS OF THE THIRD INTERNATIONAL SYMPOSIUM ON CLEANING TECHNOLOGY IN SEMICONDUCTOR DEVICE MANUFACTURING, 1993), 15-25
CODEN: PESODO; ISSN: 0161-6374
DT Journal
LA English
CC 76-3 (Electric Phenomena)
Section cross-reference(s): 66, 67
AB In this study the IMEC Clean Concept will be proposed. It is a simple two-step cleaning, based on a oxidn. step and an oxide removal step. It is demonstrated that this clean performs excellent regarding the particle and metal removal efficiencies, combined with a minimal surface roughness. Elec. breakdown measurements show also very good performance of the gate-oxide integrity after this clean.
ST silicon surface processing IMEC Clean Concept; cleaning silicon wafer particle metal removal
IT **Semiconductor** devices
(gate-oxide integrity in, cleaning process effect on)
IT Dielectric strength
(of gate oxide, on silicon after IMEC Clean Concept processing)
IT **Etching**
(of silicon, during IMEC Clean Concept processing)
IT Particles
(removal of, from silicon wafers, IMEC Clean Concept for)
IT 7631-86-9, Silica, uses
RL: USES (Uses)
(gate, cleaning technol. for improved)
IT 7647-01-0, Hydrogen chloride, uses **7664-93-9**, Sulfuric acid, uses
RL: USES (Uses)
(surface cleaning of silicon by hydrogen peroxide mixts. with)
IT 7722-84-1, Hydrogen peroxide, uses
RL: USES (Uses)
(surface cleaning of silicon by sulfuric acid mixts. with)
IT 7440-21-3, Silicon, uses
RL: USES (Uses)
(surface cleaning of, IMEC Clean Concept for good gate-oxide integrity)
IT **67-63-0**, Isopropanol, uses
RL: USES (Uses)
(surface treatment of silicon by hydrofluoric acid solns. in aq.)
IT 7664-39-3, Hydrogen fluoride, uses
RL: USES (Uses)
(surface treatment of silicon by isopropanol solns. of)

L27 ANSWER 32 OF 38 CAPLUS COPYRIGHT 2002 ACS

AN 1986:635553 CAPLUS
DN 105:235553
TI **Etching** solution for LED fabrication
IN Hayashi, Junji
PA NEC Corp., Japan
SO Jpn. Kokai Tokkyo Koho, 4 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM H01L021-306
CC 73-12 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 76
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 61077327	A2	19860419	JP 1984-198037	19840921

AB An **etching** soln. for use in the fabrication of an InGaAsP-InP surface-emitting LED is a mixt. of Br, H3PO4, and MeOH or EtOH, the ratio (the basis not given) of H3PO4/alc. being 0.2-1.0. Smooth, circular mesa **etching** is possible.
ST **etching** soln **semiconductor** LED
IT Electroluminescent devices
(indium gallium arsenide phosphide-indium phosphide, **etching** solns. for manuf. of)
IT **Etching**
(of semiconductors, by bromine-phosphoric acid-alc. mixt., for LEDs)
IT 22398-80-7P, uses and miscellaneous
RL: IMF (Industrial manufacture); PREP (Preparation)
(LEDs from indium gallium arsenide phosphide and, **etching** solns. for manuf. of)
IT 1303-00-0DP, solid solns. with Group IIIA pnictides 1303-11-3DP, solid solns. with Group IIIA pnictides 12063-98-8DP, solid solns. with Group IIIA pnictides 22398-80-7DP, solid solns. with Group IIIA pnictides
RL: IMF (Industrial manufacture); PREP (Preparation)
(LEDs from indium phosphide and, **etching** solns. for manuf. of)
IT 7726-95-6, uses and miscellaneous
RL: USES (Uses)
(**semiconductor etching** mixt. contg. phosphoric acid and alc. and, for LEDs)
IT **7664-38-2**, uses and miscellaneous
RL: USES (Uses)
(**semiconductor etching** soln. contg. bromine and alc. and, for LEDs)
IT **64-17-5**, uses and miscellaneous 67-56-1, uses and miscellaneous
RL: USES (Uses)
(**semiconductor etching** soln. contg. phosphoric acid and bromine and, for LEDs)

L27 ANSWER 33 OF 38 CAPLUS COPYRIGHT 2002 ACS
AN 1984:582216 CAPLUS
DN 101:182216
TI Compound **semiconductor** devices
PA Fujitsu Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 4 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC H01L021-265; H01L021-22; H01L029-80
CC 76-3 (Electric Phenomena)
Section cross-reference(s): 75
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 59094815	A2	19840531	JP 1982-204819	19821122
	JP 02003297	B4	19900123		

AB Compd. semiconductors device substrates with low defect concns. or undesired dopant effects are prepd. by cleaning and **etching** the surface, annealing, **etching**, and doping. Thus, GaAs was cleaned in a solvent such as CCl2:CHCl, acetone, and EtOH before heating and doping.

ST compd **semiconductor** cleaning **etching** annealing doping; gallium arsenide cleaning doping

IT **Semiconductor** devices
(**etching** and annealing in fabrication of, of compd. semiconductors)

IT Annealing
(in compd. **semiconductor** device fabrication)

IT Cleaning
Etching
(of compd. semiconductors in device fabrication)

IT **64-17-5**, uses and miscellaneous 64-19-7, uses and miscellaneous 79-01-6, uses and miscellaneous **7664-93-9**, uses and miscellaneous 7722-84-1, uses and miscellaneous
RL: USES (Uses)
(**etchant** contg., for gallium arsenide)

IT 1303-00-0, uses and miscellaneous
RL: USES (Uses)
(**semiconductor** devices from cleaning and annealing of)

L27 ANSWER 34 OF 38 CAPLUS COPYRIGHT 2002 ACS
AN 1984:482650 CAPLUS
DN 101:82650
TI Cleaning the surfaces of **semiconductor** plates
IN Lapcik, Lubomir; Zelenay, Emil; Skyrta, Jan
PA Czech.
SO Czech., 2 pp.
CODEN: CZXXA9
DT Patent
LA Slovak
IC H01L021-02
CC 76-3 (Electric Phenomena)
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	CS 206272	B	19810630	CS 1979-1754	19790316

AB Cleaning of plates before diffusion treatment, photolithog., or vapor coating comprises washing with a H2SO4-H2O2 mixt. and deionized water, **etching** with aq. HF, rinsing with water, and centrifuging with consecutive spraying with water, MeOH, EtOH, Me2CHOH, and Me2CO or MeCOEt.

ST surface cleaning **semiconductor** plate

IT **Semiconductor** materials
(cleaning of surfaces of plates of)

IT Cleaning
(of **semiconductor** plate surfaces)

IT **64-17-5**, uses and miscellaneous 67-56-1, uses and miscellaneous **67-63-0**, uses and miscellaneous 67-64-1, uses and miscellaneous 78-93-3, uses and miscellaneous 7664-39-3, uses and miscellaneous **7664-93-9**, uses and miscellaneous 7722-84-1, uses and miscellaneous
RL: USES (Uses)
(in cleaning of **semiconductor** plate surfaces)

L27 ANSWER 35 OF 38 CAPLUS COPYRIGHT 2002 ACS
AN 1984:59614 CAPLUS

DN 100:59614
TI Positive resist removal solution
PA Toshiba Corp., Japan
SO Jpn. Kokai Tokkyo Koho, 4 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC H01L021-306
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 76
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 58168239	A2	19831004	JP 1982-52000	19820330

AB Boiling strong acid soln. contg. H_2SO_4 and H_2O_2 is used to remove patterned, **etched**, and EtOH-soln. treated pos. photoresist from the oxide layer coated on a Si wafer, the EtOH treatment ensuring complete removal.
ST pos photoresist removal silicon wafer; ethanol pos photoresist removal
IT **Semiconductor** devices
(fabrication of, ethanol pretreatment in removal of pos. photoresist from silicon wafer in relation to)
IT Alcohols, uses and miscellaneous
RL: USES (Uses)
(pos. photoresist removal from silicon wafer by pretreatment with soln. contg.)
IT Resists
(photo-, pos., removal of patterned, ethanol pretreatment in)
IT **64-17-5**, uses and miscellaneous 67-56-1, uses and miscellaneous **71-36-3**, uses and miscellaneous
RL: USES (Uses)
(pos. photoresist removal from silicon wafer by pretreatment with soln. contg.)
IT **7664-93-9**, uses and miscellaneous 7722-84-1, uses and miscellaneous
RL: USES (Uses)
(pos. photoresist removal from silicon wafer with soln. contg., ethanol pretreatment in)
IT 7440-21-3, properties
RL: PRP (Properties)
(pos. photoresist removal from wafer of, ethanol pretreatment in)

L27 ANSWER 36 OF 38 CAPLUS COPYRIGHT 2002 ACS
AN 1983:514577 CAPLUS
DN 99:114577
TI Doping a **semiconductor** substrate
IN Thomas, Ian Melville; Tillman, James Joseph
PA Owens-Illinois, Inc. , USA
SO Ger. Offen., 42 pp.
CODEN: GWXXBX
DT Patent
LA German
IC C30B031-02; H01L021-225
CC 76-3 (Electric Phenomena)
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DE 3247173	A1	19830804	DE 1982-3247173	19821221
	DE 3247173	C2	19861030		
	GB 2114365	A1	19830817	GB 1982-34629	19821203
	GB 2114365	B2	19860806		
	JP 58131730	A2	19830805	JP 1983-6770	19830121

	FR 2520554	A1	19830729	FR 1983-1258	19830127
	FR 2520554	B1	19870227		
	US 4619719	A	19861028	US 1986-822942	19860127
PRAI	US 1982-343667		19820128		
	US 1984-604713		19840427		

AB A method for doping **semiconductor** substrates consists of (1) reacting Si(OR)4 (R = either a C1-6 alkyl or R1OC2H4- where R1 = C1-6 alkyl) with a sub-stoichiometric amt. of H2O in the presence of hydrolysis catalyst to give a low mol.-wt. polyorganosiloxane, (2) dissolving the polyorganosiloxane with a dopant source, (3) coating the substrate with this soln., (4) converting the coating to a glass, and (4) heating to diffuse the dopant into the **semiconductor**. Thus, Si(OEt)4 55.5, isoPrOH 100, H2O 6.1, and an As acid soln. were heated with refluxing for 1 h and cooled, a Si wafer was coated with this soln. by spinning and drying, the wafer was heated at 1000-1250.degree. for .gtoreq.15 min, and the wafer was heated in an Ar-O2 atm. and the glass **etched** off with 5% aq. HF.

ST polyorganosiloxane doping source **semiconductor**; arsenic doping silicon polysiloxane glass

IT **Semiconductor** materials
(doping sources for, from polysiloxanes)

IT Siloxanes and Silicones, uses and miscellaneous
RL: USES (Uses)
(doping sources from, for semiconductors)

IT Glass, oxide
RL: TEM (Technical or engineered material use); USES (Uses)
(from polysiloxane coatings, as doping sources for semiconductors)

IT Siloxanes and Silicones
Siloxanes and Silicones, uses and miscellaneous
RL: PREP (Preparation)
(in prepn. of polysiloxane doping sources for semiconductors)

IT **7664-38-2**, uses and miscellaneous
RL: USES (Uses)
(as phosphorus doping source, for silicon)

IT 5314-55-6
RL: USES (Uses)
(boron doping source from, for silicon)

IT 1327-53-3
RL: USES (Uses)
(dopant source from, for silicon)

IT 7440-38-2, uses and miscellaneous
RL: USES (Uses)
(doping of silicon by, from polysiloxane glass source)

IT 7440-21-3, uses and miscellaneous
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(doping of, with polysiloxane doping sources)

IT 7440-42-8, uses and miscellaneous 7723-14-0, uses and miscellaneous
RL: USES (Uses)
(doping source of polysiloxanes for, for silicon)

IT **67-63-0**, uses and miscellaneous 7647-01-0, uses and miscellaneous 7697-37-2, uses and miscellaneous
RL: USES (Uses)
(in arsenic doping source prepn. for silicon)

IT 78-10-4
RL: USES (Uses)
(in doping source prepn. for silicon)

L27 ANSWER 37 OF 38 CAPLUS COPYRIGHT 2002 ACS
AN 1982:537340 CAPLUS
DN 97:137340
TI Circular cavities for optical fibers formed by chemical **etching** in gallium arsenide, gallium phosphide, and cadmium mercury telluride single-crystal chips.

IN Marie, Claude
PA Radiotechnique-Compelec (RTC), Fr.
SO Fr. Demande, 10 pp.
CODEN: FRXXBL
DT Patent
LA French
IC C23F001-02; C09K013-00; G03F007-00; H01L031-18; H01L033-00
CC 76-3 (Electric Phenomena)
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
FR 2486104	A1	19820108	FR 1980-15001	19800704

AB For prepg. essentially circular cavities (e.g., diam. 200-300 .mu.m, depth .apprx.100 .mu.m) in single-crystal fcc. **semiconductor** chips of GaAs (I), GaP (II), or CdHgTe (III) for the insertion of optical fibers (assocd. with LED's), a method is described, in which: (a) a Si3N4 mash [M] (thickness t = 1000-2000 .ANG.) is deposited on a {100} crystallog. surface [e.g., the (100) plane] of a rectangular chip [t .apprxeq. 150 .mu.m, and having its pairs of parallel sides in the (1) (011) and (0.hivin.1.hivin.1) cleavage planes and (2) (01.hivin.1) and (0.hivin.11) cleavage planes, resp.]; (b) a window [W] is photoengraved in M having the form of a regular octagon, of which the 1st and 2nd consecutive sides make an angle of 22.degree.30' with respect to the [011] crystallog. direction which is parallel to the sides in the (011) and (0.hivin.1.hivin.1) cleavage planes; and (c) chem. **etching** is done in W to give a circular cavity, where the **etchant** is: NH4OH + H2O2 (pH = 8.4), Br2 + MeOH + EtOH, or H2SO4 + H2O2 for I; HCl + fuming HNO3 for II; and Br2 + HBr for III.

ST optical fiber cavity **semiconductor etching**; phosphide gallium chem **etching**; arsenide gallium chem **etching**; gallium pnictide chem **etching**; cadmium mercury telluride chem **etching**; silicon nitride mask **etching** **semiconductor**; hydrogen peroxide **etching** gallium arsenide; ammonium hydroxide peroxide **etching** arsenide; sulfuric acid peroxide **etching** arsenide; hydrochloric nitric acid **etching** phosphide; LED optical fiber cavity **etching**; bromine **etching** arsenide telluride; hydrobromic acid bromine **etching** telluride

IT Fiber optics
(**etching** of cavities for, in **semiconductor** chips)

IT **Semiconductor** materials
(**etching** of circular cavities in chips of, for optical fibers)

IT **Etching**
(of circular cavities in **semiconductor** chips, for optical fibers)

IT **64-17-5**, reactions 67-56-1, reactions 1336-21-6 7647-01-0, reactions **7664-93-9**, reactions 7697-37-2, reactions 7722-84-1, reactions 7726-95-6, reactions 10035-10-6, reactions
RL: RCT (Reactant)
(**etching** by, of circular cavities in **semiconductor** chips, for optical fibers)

IT 1303-00-0, reactions 1306-25-8D, solid soln. with mercury telluride 12063-98-8, reactions 12068-90-5D, solid soln. with cadmium telluride
RL: RCT (Reactant)
(**etching** of circular cavities in chips of, for optical fibers)

IT 12033-89-5, uses and miscellaneous
RL: USES (Uses)
(masks from, for **etching** of circular cavities in **semiconductor** chips, for optical fibers)

L27 ANSWER 38 OF 38 CAPLUS COPYRIGHT 2002 ACS

AN 1982:191428 CAPLUS
DN 96:191428
TI Composition and electron stress effects in silicon nitride thin films made by thermal growth and chemical **etching** of LPCVD MNOS structures as studied by x-ray photoelectron spectroscopy (XPS)
AU Wurzbach, J. A.; Grunthaner, F. J.; Maserjian, J.
CS Jet Propulsion Lab., California Inst. Technol., Pasadena, CA, 91109, USA
SO J. Vac. Sci. Technol. (1982), 20(4), 962-5
CODEN: JVSTAL; ISSN: 0022-5355
DT Journal
LA English
CC 76-3 (Electric Phenomena)
AB XPS was used in conjunction with stopped-flow chem. **etching** and angular resoln. to obtain depth profiles and interface structures of native oxide LPCVD (low-pressure chem.-vapor-deposition) MNOS structures and thermally grown Si3N4 films. Depth profiling of LPCVD samples required stopped-flow **etching** with HF/H3PO4/EtOH (15:10:60). A uniform compn. of nearly stoichiometric Si3N4 was found throughout the bulk; SiO2 was found intact at the interface along with a sharp Si3N4/SiO2 interface width of 8-10 .ANG.. Another LPCVD sample was **etched** to .apprx. 30 .ANG. and subjected to a low-energy electron flux in an XPS investigation of degrdn. mechanisms of MNOS devices; cleavage of Si-H bonds was obsd. Angle-resolved XPS on thin, thermally grown films showed a compositional gradient ranging from a high concn. of oxide at the surface to nearly pure Si3N4 at the interface. The results are related to interface-state formation and mechanisms of MNOS memory degrdn. and film growth.
ST MNOS interface structure; silicon nitride interface MNOS; energy interface state MNOS; XPS MNOS structure; depth profile MNOS structure; **etching** MNOS structure
IT **Semiconductor** devices
(MNOS, depth profiles and interface structures of native-oxide low-pressure chem.-vapor-deposition structures of, XPS detn. of)
IT Energy level, surface
(interface, of MNOS structures, XPS in relation to)
IT **Etching**
(stopped-flow, in depth profiling of MNOS structures)
IT 12033-89-5, properties
RL: PRP (Properties)
(depth profiles and interface structures of, in MNOS structures, XPS detn. of)
IT **64-17-5**, uses and miscellaneous
RL: USES (Uses)
(in stopped-flow **etching** of MNOS structures, in depth profiling)
IT **7664-38-2**, reactions 7664-39-3, reactions
RL: RCT (Reactant)
(in stopped-flow **etching** of MNOS structures, in depth profiling)
IT 7631-86-9, properties
RL: PRP (Properties)
(interface of, in MNOS structures)

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(FILE 'HOME' ENTERED AT 22:18:32 ON 28 JUN 2002)

FILE 'REGISTRY' ENTERED AT 22:18:43 ON 28 JUN 2002
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E SULFURIC
E SULFURIC ACID/CN

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                  E BORIC ACID/CN
L4              2 S E3
                  E CARBONIC ACID/CN
L5              1 S E3
                  E PERCHLORIC ACID/CN
L6              1 S E3
                  E SULFUROUS ACID/CN
L7              1 S E3
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L8              1 S E3
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L9              1 S E3
                  E BUTYLENE GLYCOL/CN
L10             3 S E3
                  E DIPROPYLENE GLYCOL/CN
L11             1 S E3
                  E SORBITOL/CN
L12             1 S E3
                  E HEXYLENE GLYCOL
                  E HEXYLENE GLYCOL/CN
L13             1 S E3
                  E 1,3-DIBUTYLENE GLYCOL/CN
                  E 1,2,6-HEXANETRIOL/CN
L14             1 S E3
                  E 1,5-PENTANEDIOL/CN
L15             1 S E3
                  E ETHANOL/CN
L16             1 S E3
                  E PROPANOL/CN
L17             2 S E3
                  E ISOPROPANOL/CN
L18             1 S E3
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L19             1 S E3
                  E BUTANOL/CN
L20             2 S E3

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L23          5622 S ETCH? AND (L1 OR L2 OR L3 OR L4 OR L5 OR L6 OR L7)
L24            82 S L23 AND (L8 OR L9 OR L10 OR L11 OR L12 OR L13 OR L14 OR L15)
L25           160 S L23 AND (L16 OR L17 OR L18 OR L19 OR L20)
L26            18 S L24 AND (SEMICONDUCTOR)
L27            38 S L25 AND SEMICONDUCTOR

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ALL L# QUERIES AND ANSWER SETS ARE DELETED AT LOGOFF
LOGOFF? (Y)/N/HOLD:y
COST IN U.S. DOLLARS                                SINCE FILE      TOTAL
                                                      ENTRY    SESSION
FULL ESTIMATED COST                                   160.91     286.72

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CA SUBSCRIBER PRICE                                   -34.69     -34.69

STN INTERNATIONAL LOGOFF AT 22:56:30 ON 28 JUN 2002
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2	BRS	L2	203529	ethanolor propanol or methanol or n-butanol or isopropanol or isobutanol	USPAT
3	BRS	L3	251482	ethanol or propanol or methanol or n-butanol or isopropanol or isobutanol	USPAT
4	BRS	L4	89861	etching	USPAT
5	BRS	L5	238613	(polycrystalline adj silicon) or (amorphous adj silicon) or (silicon or germanium or gallium arsenide)	USPAT
6	BRS	L6	30320	4 same 5	USPAT
7	BRS	L7	60185	doped	USPAT
8	BRS	L8	6392	6 same 7	USPAT
9	BRS	L10	8	8 same (1 and 3)	USPAT
10	BRS	L12	28	(8 same 1) and 3	USPAT

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